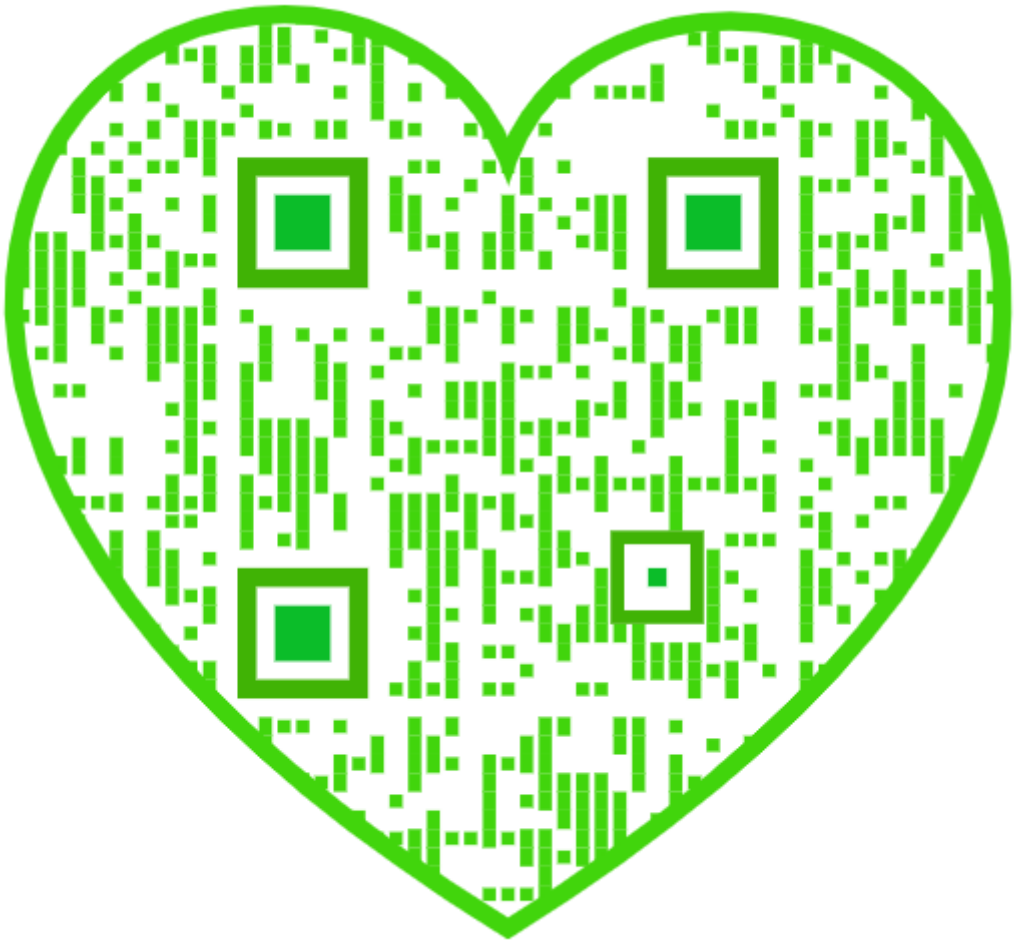

THE ARCHITECT AND ENGINEER

OF CALIFORNIA

JANUARY, 1919

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The Architect and Engineer of California—January, 1919—No. 1. Vol. LVI. Published monthly—$2.50 a year—627 Foxcroft Building, San Francisco, Cal. Entered as second-class matter, Nov. 2, 1905, at the Post Office at San Francisco, Cal., under the Act of March 3, 1879.

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Gladding, McBean & Company, Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Company and United Materials Company, Crossley Building, San Francisco.
Livermore Fire Brick Works, Livermore, Cal.

ASBESTOS ROOFING, PACKING, ETC.
Aspromet Co., Hobart Bldg., San Francisco.
H. W. Johns-Manville Co., San Francisco, Los Angeles and Portland, Ore.

AUTOMATIC SPRINKLERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., Howard St., San Francisco.

BANK FIXTURES AND INTERIORS
Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Home Mfg. Co., 543 Brannan St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

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Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

BLACKBOARDS
C. F. Weber & Co., 985 Market St., San Francisco, Los Angeles and Reno, Nevada.
Beaver Blackboards and Greenboards. Rucker-Fuller Desk Company. Coast agents. 677 Mission St., San Francisco; also Oakland and Los Angeles.

BOILERS
Franklin Water Tube Boiler, General Machinery and Supply Co., 39 Stevenson St., San Francisco.
Kewanee Water Supply System, Simonds Machinery Co., 117 New Montgomery St., San Francisco.

BONDS FOR CONTRACTORS
J. T. Costello Co., 333 Pine St., San Francisco.
Bonding Company of America, Kohl Bldg., San Francisco.
Globe Indemnity Co., 120 Leidesdorff St., San Francisco.
Fidelity & Casualty Co. of New York, Merchants Exchange Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland,, Insurance Exchange, San Francisco.

BONDS FOR CONTRACTORS (Continued)
John H. Robertson, successor to Robertson & Hall, 621 First National Bank Building, San Francisco.

BOOK BINDERS AND PRINTERS
Hicks-Judd Company, 51-65 First St., San Francisco.

BRASS GOODS, CASTINGS, ETC.
H. Mueller Manufacturing Co., 635 Mission St., San Francisco.

BRICK—PRESSED, PAVING, ETC.
California Brick Company, Niles, Cal.
Livermore Fire Brick Works, Niles, Cal.
Gladding, McBean & Company, Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
United Materials Co., Crossley Bldg., San Francisco.

BRICK AND CEMENT COATING
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
The Paraffine Companies, Inc., 34 First St., San Francisco.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.

BRICK STAINS
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.

BUILDERS' HARDWARE
Bennett Bros., agents for Sargent Hardware, 514 Market St., San Francisco.
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree & Co.

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Pacific Building Materials Co., Underwood Bldg., San Francisco.
Waterhouse-Wilcox Co., 523 Market St., San Francisco.

CABINET MAKERS
Home Manufacturing Company, 543 Brannan St., San Francisco.
Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.

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WALL PAPER AND DRAPERIES
SPECIAL PRICES TO ARCHITECTS AND CONTRACTORS
KELLER & COYLE
233 GRANT AVENUE, SAN FRANCISCO
Telephone SUTTER 180

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CEMENT
Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market street, San Francisco.
Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 523 Market St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland & Co., Inc., Boston, Mass. Hambly & Sons, agents for San Francisco and Los Angeles.
Mauerene Likwid Sement, sold by the Imperial Company, Monadnock Bldg., San Francisco.
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.

CEMENT FLOOR COATING
Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
W. E. Mushet Co., 502 Mission St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.

CONCRETE CONSTRUCTION
Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker, 251 Kearny St., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.

CONCRETE MIXERS
Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.

CONCRETE REINFORCEMENT
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Twisted Bars. Sold by Woods, Huddart & Gunn, 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., Underwood Bldg., San Francisco.

CONCRETE SURFACING
"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL
K. E. Parker, 251 Kearny St., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.

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and J. D. Martin Scenic Co. **400 PANTAGES BLDG., SAN FRANCISCO**

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Monson Bros., 1907 Bryant St., San Francisco.
Grace & Bernieri, Claus Spreckels Bldg., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
Knowles & Mathewson, Call Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CORK TILING, FLOORING, ETC.
Be-ver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK
California Building Material Company, Call-Post Bldg., San Francisco.
Grant Gravel Company, 603 Flatiron Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Mauerene," sold by Imperial Co., Monadnock Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 530 Folsom St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., Howard St., San Francisco.
Geo. A. Sittman, 21 Beale St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRICAL ENGINEERS
Chas. T. Phillips, Pacific Bldg., San Francisco.

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ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ENGINEERS
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

FANS AND BLOWERS
John Ringius, 252 Townsend St., San Francisco.

FENCES—WIRE
Pacific Fence Construction Co., 245 Market St., San Francisco.

FIRE ESCAPES
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE EXTINGUISHERS
Scott Company, 243 Minna St., San Francisco
Pacific Fire Extinguisher Co., Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Fuller & Goepp, 34 Davis St., San Francisco.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent, Crossley Building, San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Grant Gravel Company, 603 Flatiron Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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HOLLOW TILE BLOCKS

Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES

J. L. Mott Iron Works, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM

Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES

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Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

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INSPECTIONS AND TESTS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE

J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS

Beach-Robinson Co., 239 Geary St., San Francisco.

The Tormey Co., 1042 Larkin St., San Francisco.

Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS

Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.

J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS

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LATHING MATERIAL

Pacific Building Materials Co., Underwood Bldg., San Francisco.

Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.

Holloway Expanded Metal Company, 517-39 Second St., San Francisco.

LIGHT, HEAT AND POWER

Great Western Power Company, Stockton St., near Sutter, San Francisco.

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The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

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California Redwood Association, 216 Pine St., San Francisco.

Dudfield Lumber Co., Palo Alto, Cal.

Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.

Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

Pope & Talbot, foot of Third St., San Francisco.

Portland Lumber Co., 16 California St., San Francisco.

Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES

American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS

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Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

National Mill and Lumber Co., San Francisco and Oakland.

The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS

American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.

S. T. Johnson Co., 1337 Mission St., San Francisco.

T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.

W. S. Ray Mfg. Co., 29 Spear St., San Francisco.

G. E. Witt Co., 862 Howard St., San Francisco.

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California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.

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C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.

Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

Sartorius Company, Inc., 15th and Utah Sts., San Francisco.

West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PAINT FOR CEMENT

Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.

Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.

Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.

Paraffine Companies, 34 First St., San Francisco.

Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

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D. Zellnsky & Sons, San Francisco and Los Angeles.

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Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.

Aspromet Company, Hobart Bldg., San Francisco.

The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.

Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.

Magner Bros., 414-424 Ninth St., San Francisco.

R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.

W. P. Fuller & Co., all principal Coast cities.

"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER

White Bros., Fifth and Brannan Sts., San Francisco.

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California Brick Company, Niles, Cal.

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Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS

The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY

U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS

MacGruer & Co., 180 Jessie St., San Francisco.

PLUMBING CONTRACTORS

Alex Coleman, 706 Ellis St., San Francisco.

Gilley-Schmid Company, 198 Otis St., San Francisco.

Scott Co., Inc., 243 Minna St., San Francisco

Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.

California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.

Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.

Crane Co., San Francisco, Oakland, Los Angeles.

Gilley-Schmid Company, 198 Otis St., San Francisco.

Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.

J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.

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Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POTTERY
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PUMPS
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.
Woodin & Little, 33-41 Fremont St., San Francisco.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., Underwood Bldg., San Francisco.
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Aspromet Company, Hobart Bldg., San Francisco.

SAFETY TREADS
Pacific Building Materials Co., Underwood Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

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Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK, SKYLIGHTS, ETC.
San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SKYLIGHTS
Aspromet Company, Hobart Bldg., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.

STEEL AND IRON—STRUCTURAL—Continued
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
W. P. Fuller Co., all principal Coast cities.
The Paraffine Companies, Inc., 34 First St., San Francisco.

STEEL REINFORCING
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles; W. B. Kyle, San Francisco representative, Call Bldg.
Woods, Huddart & Gunn, 444 Market St., San Francisco.

STEEL ROLLING DOORS
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Springfield steel sash, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

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California Granite Co., Gen. Contractors' Ass'n, San Francisco.
McGilvray Stone Company, 634 Townsend St., San Francisco.
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Fuller & Goepp, 34 Davis St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

TELEPHONE AND ELECTRIC EQUIPMENT
Bittmann & Battee, 84 Second St., San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR FLOORING
Holloway Expanded Metal Company, 517-539 Second St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

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Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

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Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
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Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

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C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATOR COWLES
San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

VENTILATORS
Aspromet Company, Hobart Bldg., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

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Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
Keller & Coyle, 233 Grant Ave., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 478 Sutter St., San Francisco, and 402 Fifteenth St., Oakland.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Co., Monadnock Bldg., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Building Materials Co., 523 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

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"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOWS—REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.

WIRE FENCE
Pacific Fence Construction Co., 245 Market St., San Francisco.

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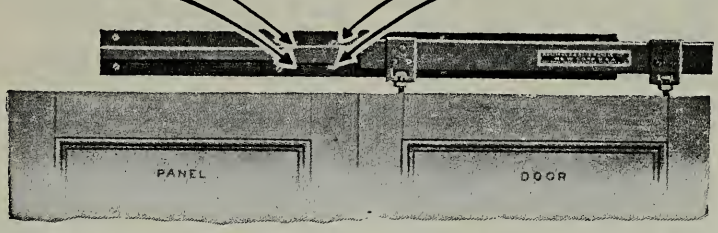

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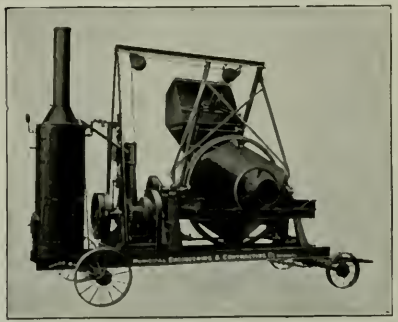

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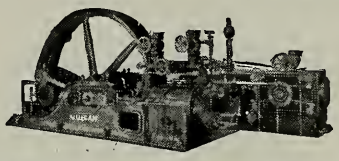

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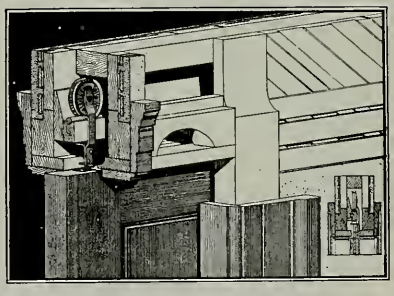

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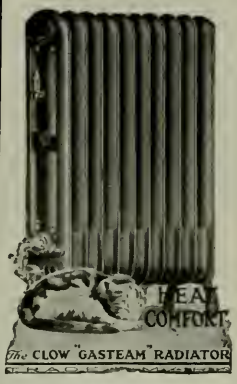

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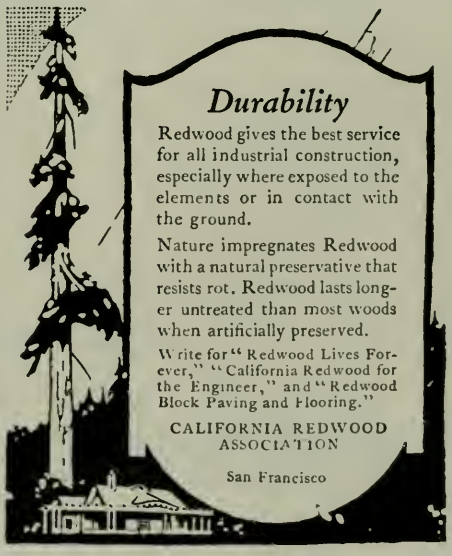

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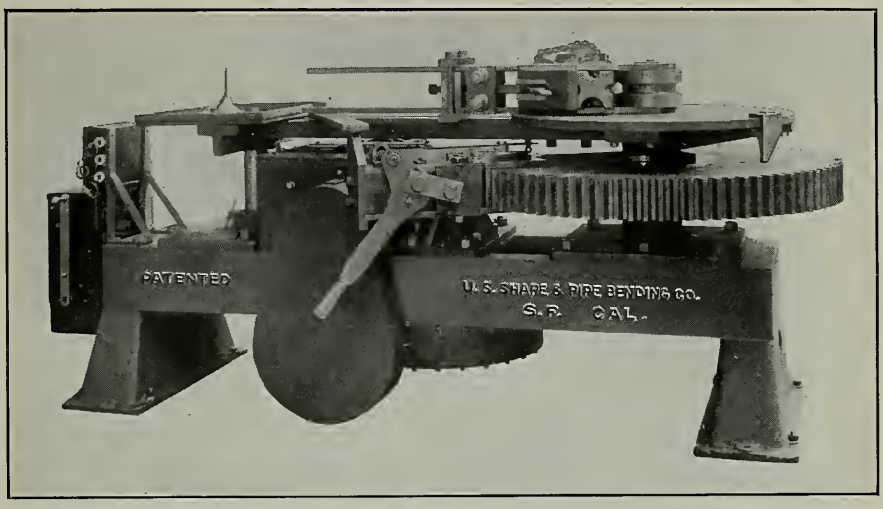

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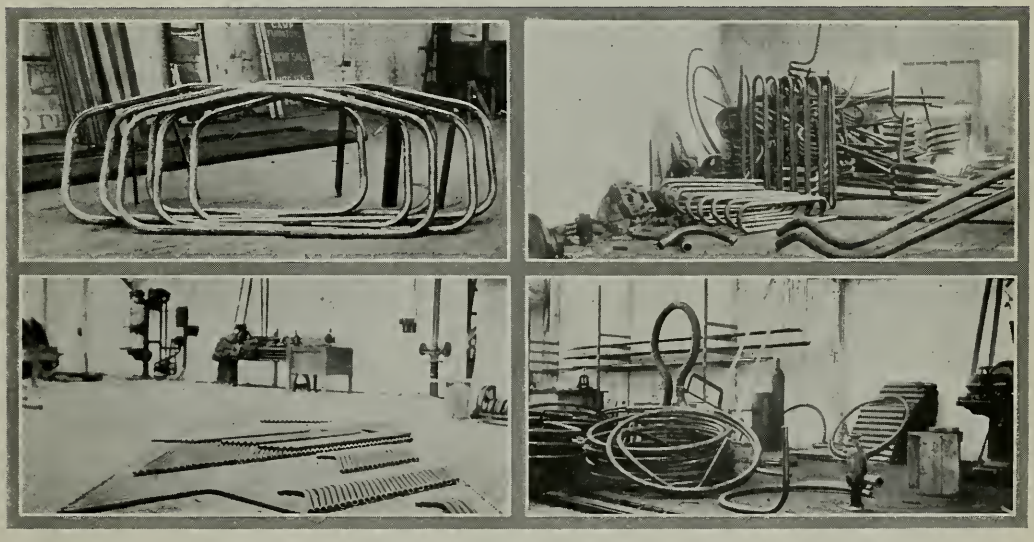

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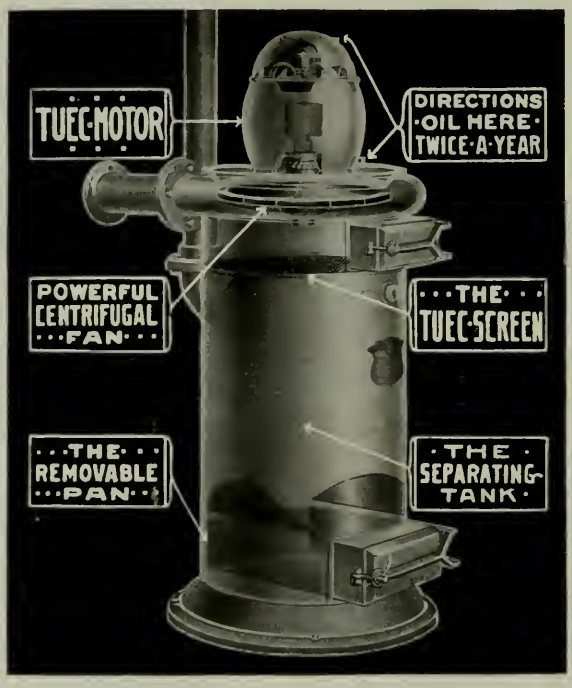

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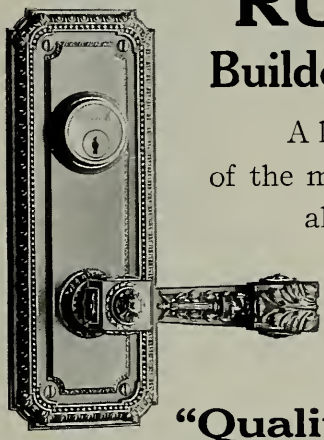

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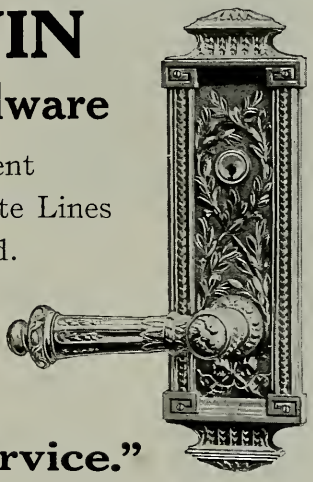

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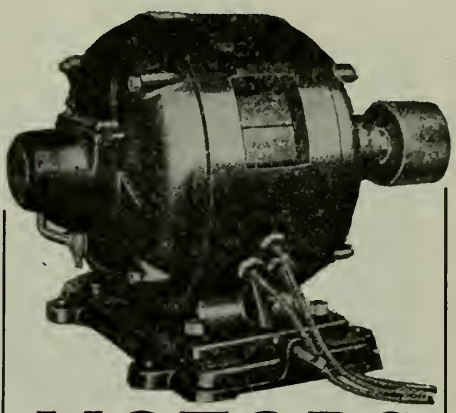

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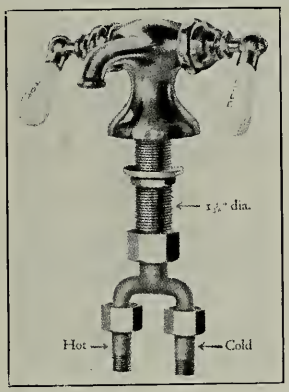

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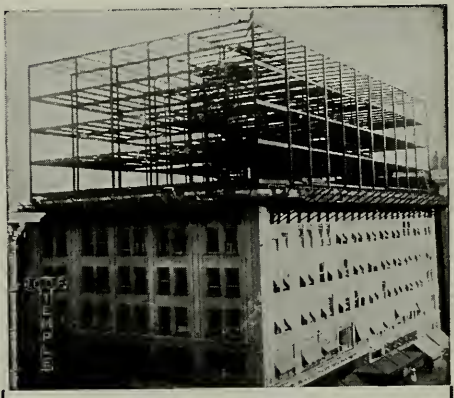

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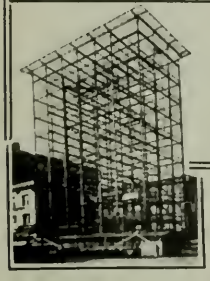

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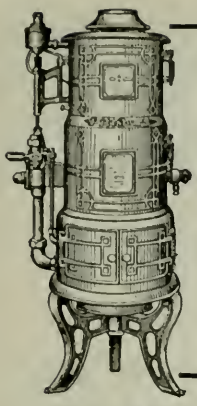

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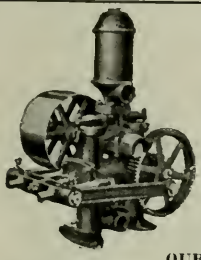

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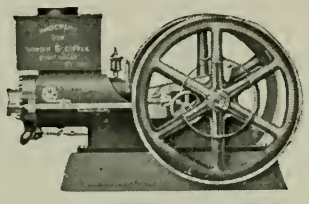

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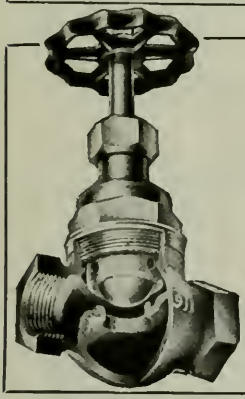

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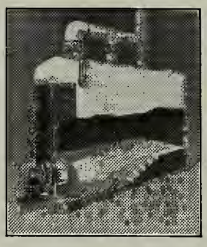
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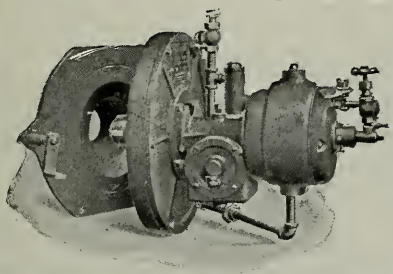

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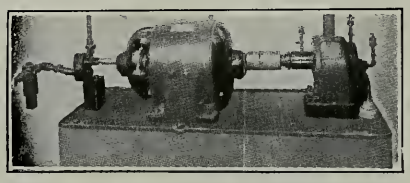

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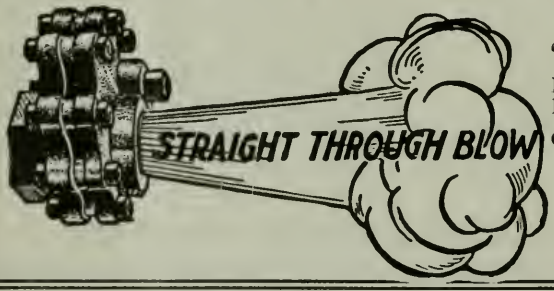

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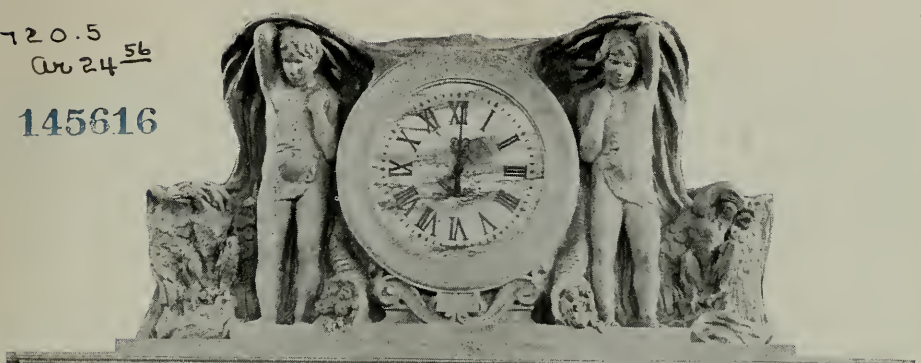

The Architect and Engineer

Volume LVI. OF CALIFORNIA Number 1.

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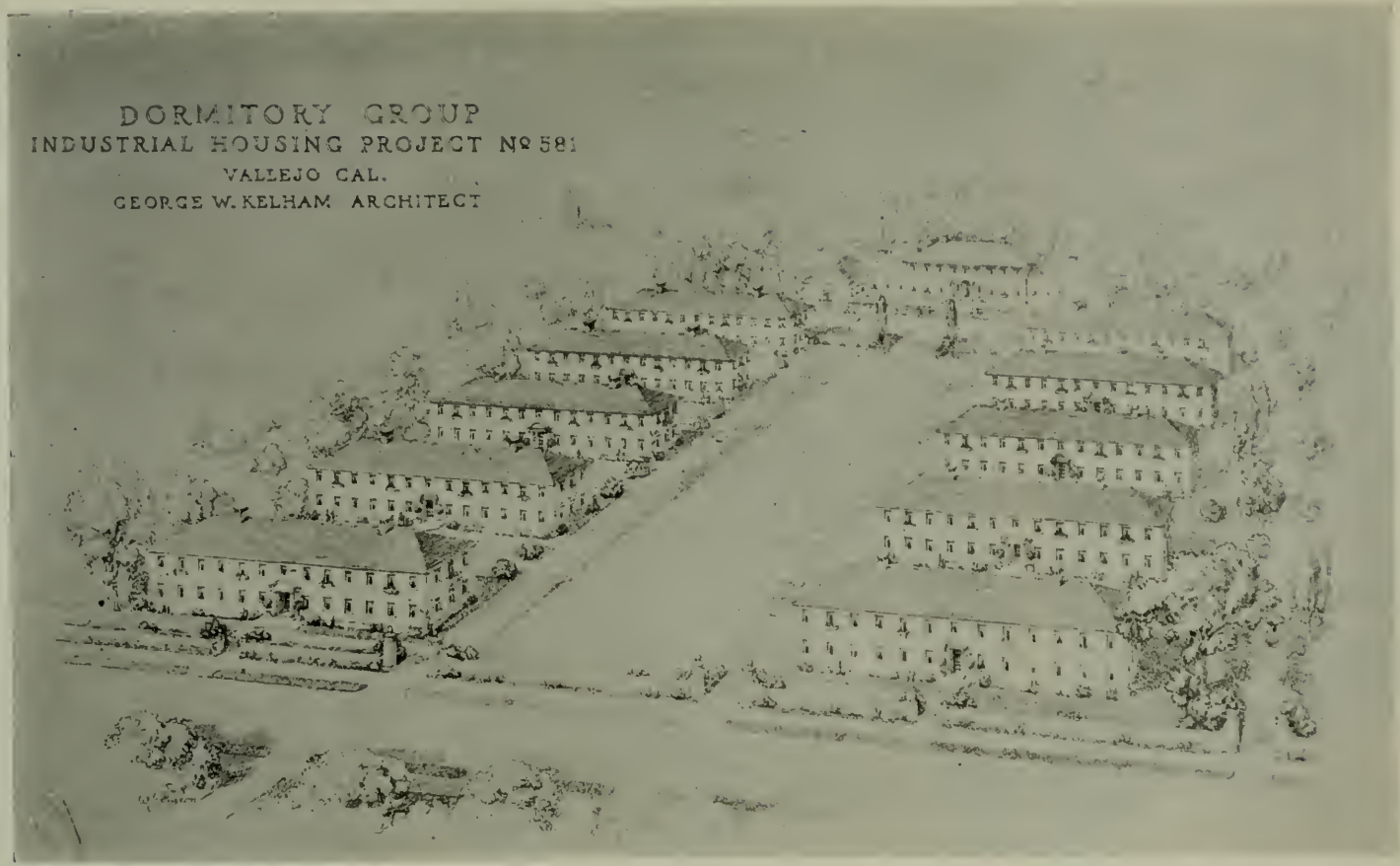

DORMITORY GROUP, INDUSTRIAL HOUSING PROJECT, VALLEJO, CALIFORNIA
GEO. W. KELHAM, ARCHITECT

THE
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ENGINEER
OF CALIFORNIA

JANUARY, 1919 Vol. LVI. No. 1

The Vallejo Housing Scheme

United States Housing Corporation's Project No. 581

By WILLIAM C. HAYS, A. I. A.

SPEAKERS and writers on "Industrial Housing" too generally fail to grasp two, if not more, sources of weakness in the position which they take. The first of these dangers lies in making comparisons with European countries. In the last four years, more especially with England, although before the outbreak of the war many of these theorists held up German paternalism as the most worthy of models; but in either case this is making comparison without a basis in similarity. The state of mind of the typical American workman toward his place in society is utterly at variance with that of the European.

Any American workman knows, from his everyday experience, that wages, salary and profits form an ascending scale of earning sources, which have in common the fact that they are all contingent on a productive process, through positive activity. Subsidies, other recognized sources of income, are negligible here, for they are not—like wages, salary or profits—the day's pay for the day's toil. Any American workman of intelligence is familiar with this scale, and with all its shadings. He knows that there are no serious barriers to the possibility of his scaling upward to the higher standards; he *expects*, as a matter of course, to rise. Before his vision always are the examples of men who, starting from little, have attained much. Leaving aside the relatively few men of the Schwab, Carnegie and Rockefeller types, he knows of hundreds who have started near the bottom and have become real forces in their respective fields and in the community, or even in national life. It is of great importance that the promoters of any housing scheme keep in mind the dangers that lurk in an attitude of paternalism, or the appearance of such an attitude, toward the workers for

whom the provision is being made. Independence is a precious possession always, but doubly precious in these days. It should be borne in mind that the single houses in the general scheme will be regarded, at least by the ambitious among their occupants, as merely milestones on the way of progress. Any housing project has for one of its functions the stabilizing of labor, but often the house in the community village is merely a shelter for the time being, and its occupant expects some day to move into the bigger house of his dreams; the house in what he vaguely regards as a better (meaning merely different or "exclusive") neighborhood.

A second, and still more serious flaw of the common agitator's position is in the use of the patronizing term (with the manner implied by the term) "betterment"; for once let the impression spread that "high-brows" and "philanthropists" are behind the project, and your self-reliant American will have none of it. Rather, the demand, or at least the expression of willingness, is most naturally created within the workers' ranks and through their realization of a need—to which the answer should be ready and forthcoming. The impression must be that of a *village for the workers*, and not of the workers for the village.

Is it probable that wise people at the head of affairs have recognized the ticklish nature of this question? And is it significant that various associations and societies are allowed to go their way agitating, theorizing and talking, but that when results are needed these bodies have been almost ignored—while the services of "hard-heads," and not the "high-brows" are engaged? If so, we must still admit that much has been learned from all the agonizing and discussion, even though a great deal of it has been futile. For is it not true that the jewel itself is found within its matrix?

Now, if the plant whose employees are to be housed is actually in or close to a large city this difficulty of stabilizing the residence is many times multiplied. Notwithstanding that the houses may be excellent in design, sanitation and equipment, and the village itself may be well laid out, built and planted, many of the hands will prefer to go entirely away from the surroundings of their day's work, even at the expense of considerable travel and into a neighborhood where they may occupy houses distinctly inferior to the plant's own housing scheme.

In the enterprise of the United States Housing Corporation at Vallejo there is fortunately no serious competition from any large city that is within reach. Furthermore, the problem of placing the population in the community practically does not exist, for this population is there and waiting for shelter.

Mare Island, on which is located the well-known United States Navy Yard of that name, is near the northernmost end of San Francisco Bay, or rather its continuation, San Pablo Bay, and just where the waters narrow down into the Carquinez Straits. It is of hilly contour and in the main of rock formation. To the southwest the Island is somewhat exposed to storms coming over a long length of open water. On its eastern side where it is comparatively sheltered, it is separated from the mainland by an estuary called Mare Island Strait. Here, where there is considerable flat land along the water frontage, the Navy Yard was established years ago. Opposite the Navy Yard, across the estuary is the old town of Vallejo, a community the prosperity of which now depends largely on the Yard, and, to a less degree, on an important near-by flour mill; although it is also one of the railroad outlets from the rich agricultural country of the Napa Valley. The older quarter of the town is mostly built up in the typically haphazard way characteristic of American cities, large as well as small; but in old Vallejo there are few houses of quality, either as to design or equipment, and there was a shortage of proper housing facilities even in pre-war times.

With the sudden increase in the working force at the Navy Yard, when rapid output and increased personnel were imperative, there came a natural demand not only for more but also better housing. This need is now being met by the United States Housing Corporation in the construction of the scheme here described and illustrated.

"The project is located immediately north of the city of Vallejo upon the western slope of the hills facing Mare Island Strait. A tract of land having a total area of approximately 140 acres has been purchased with a view to the provision for not only present but future housing development. The area covered by the present initial development is approximately 40 acres. The layout of the townsite has been most carefully considered and advantage has been taken of the sloping hillside topography to obtain a subdivision that is rich in opportunities for attractive development when built under one comprehensive and well thought out plan, such as that now being carried out.

"The project consists of two separate and detached units, or sections. The dormitories are located upon a small tract isolated from the main project just within the northern limits of the city of Vallejo. The main project has its southern boundary approximately one-quarter mile north of the dormitory section and extends northward for half a mile along Mare Island Strait."

At present communication with Vallejo is by ferry boat only, but a proposed causeway will greatly improve the traffic.

The dormitory site is the one nearest the Yard. Its buildings, which are intended for single men only, are laid out in the simple and obvious scheme of single rooms, with a corridor between, and with plumbing and similar general facilities at centralized locations. There are ten dormitories, two stories in height, each having forty (40) bedrooms, a community room, and a supervisor's room.

It is, however, the development of the larger and more distant site, where will be the housing scheme proper, with which we are most concerned. In this part of the project all of the generally accepted unit types of house are being represented, and there will be, in the initial construction, single houses as follows: Twenty-four semi-detached five-room residences, 17 six-room residences, 32 five-room residences, 34 four-room residences, making a total of 107 residences, two stories high.

There are twenty, four-family, four-room, and ten, four-family, three-room apartment buildings, two stories in height.

The project has a housing capacity, as follows:

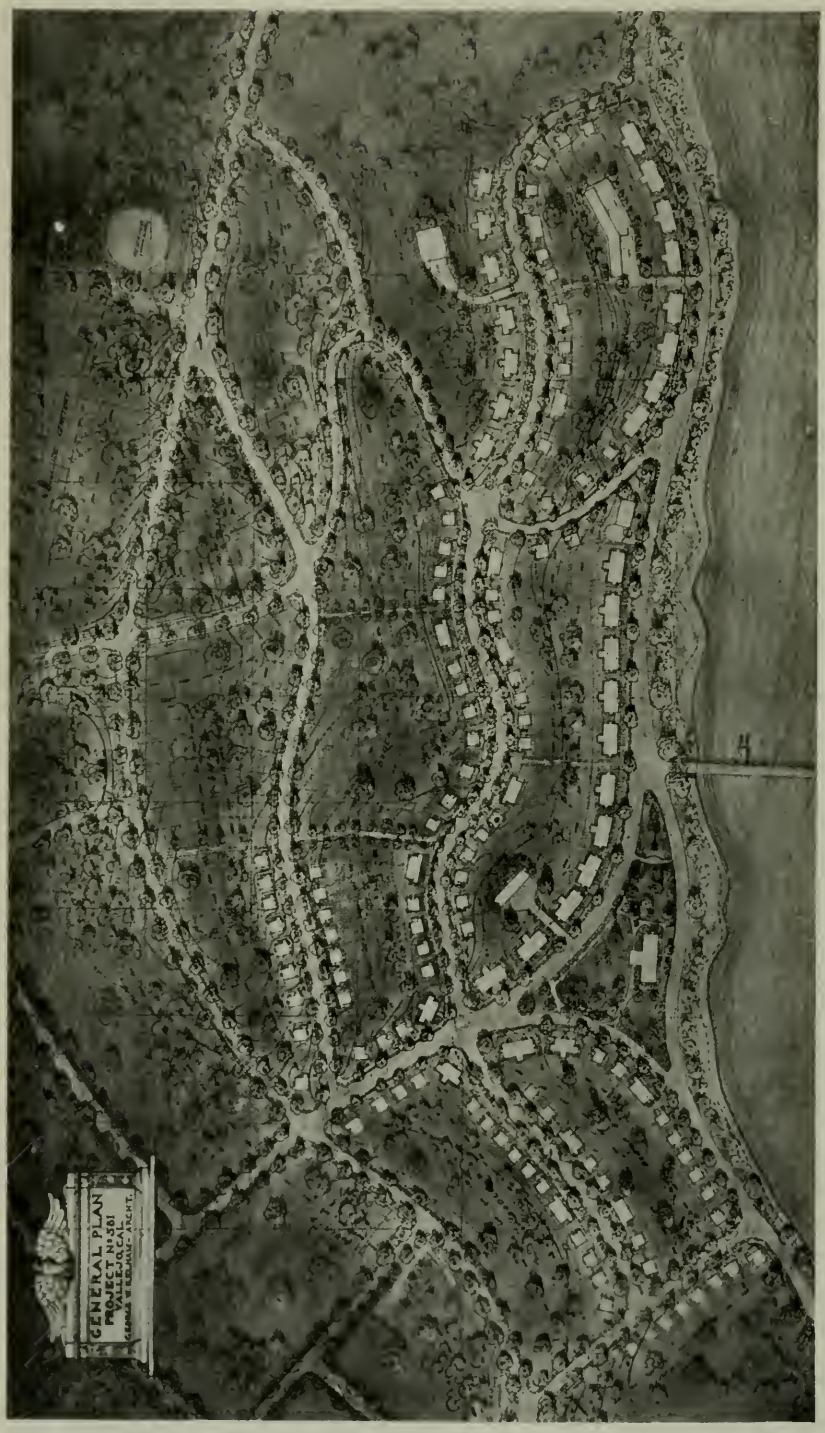
Dormitory group	400	persons
Residence group—		
Apartments	120	families
Residences	107	families
Total	227	families

Future development has been provided for as follows:

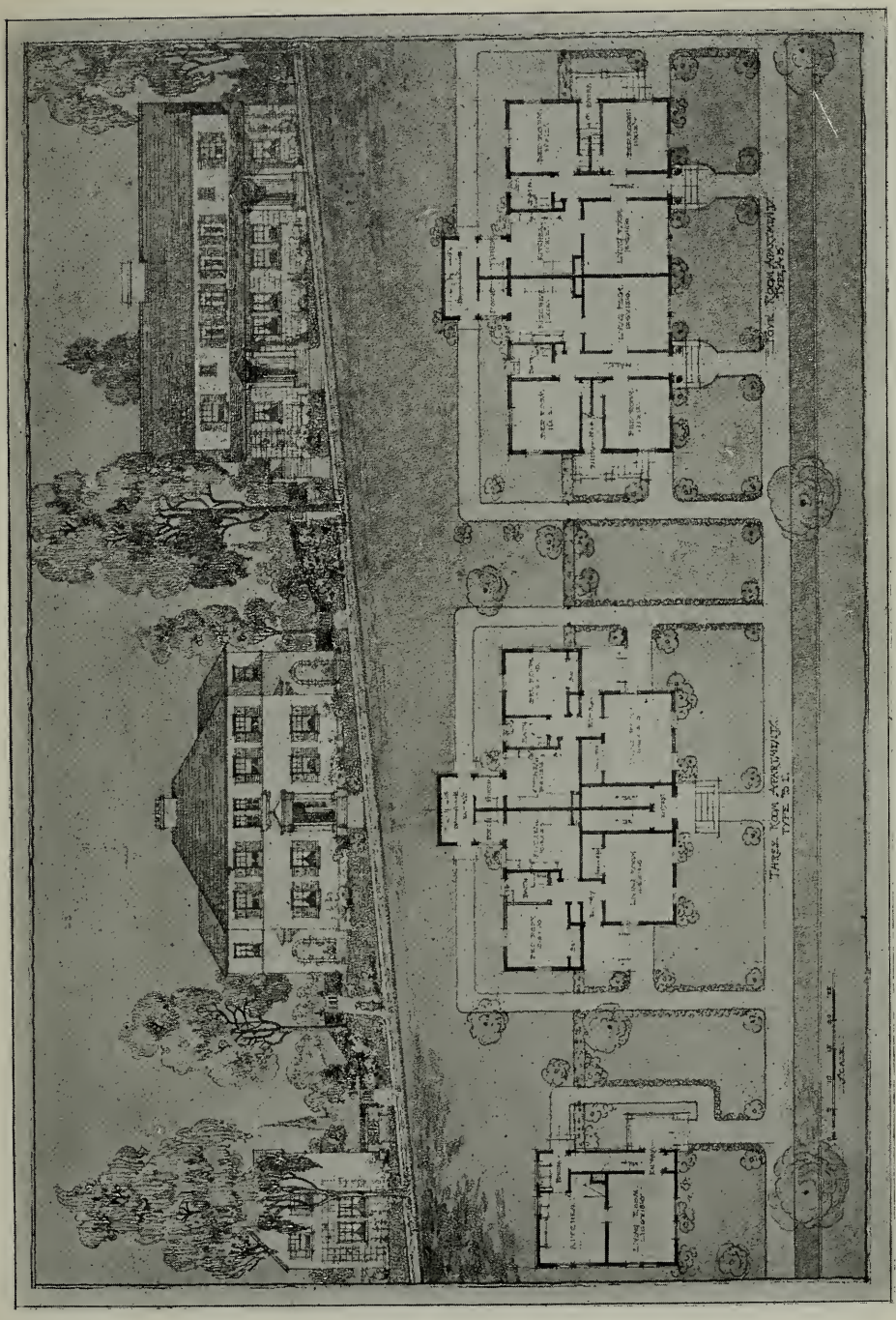
100 single houses.
270 single bungalows.
32 semi-detached bungalows.
25 four-family 4-room apartments.

The question of caring for automobiles is an ever-present one, and here the system used will be that of district or group garages, so doing away with the generally unsightly and always "dinkey" little boxes so generally seen with the small house.

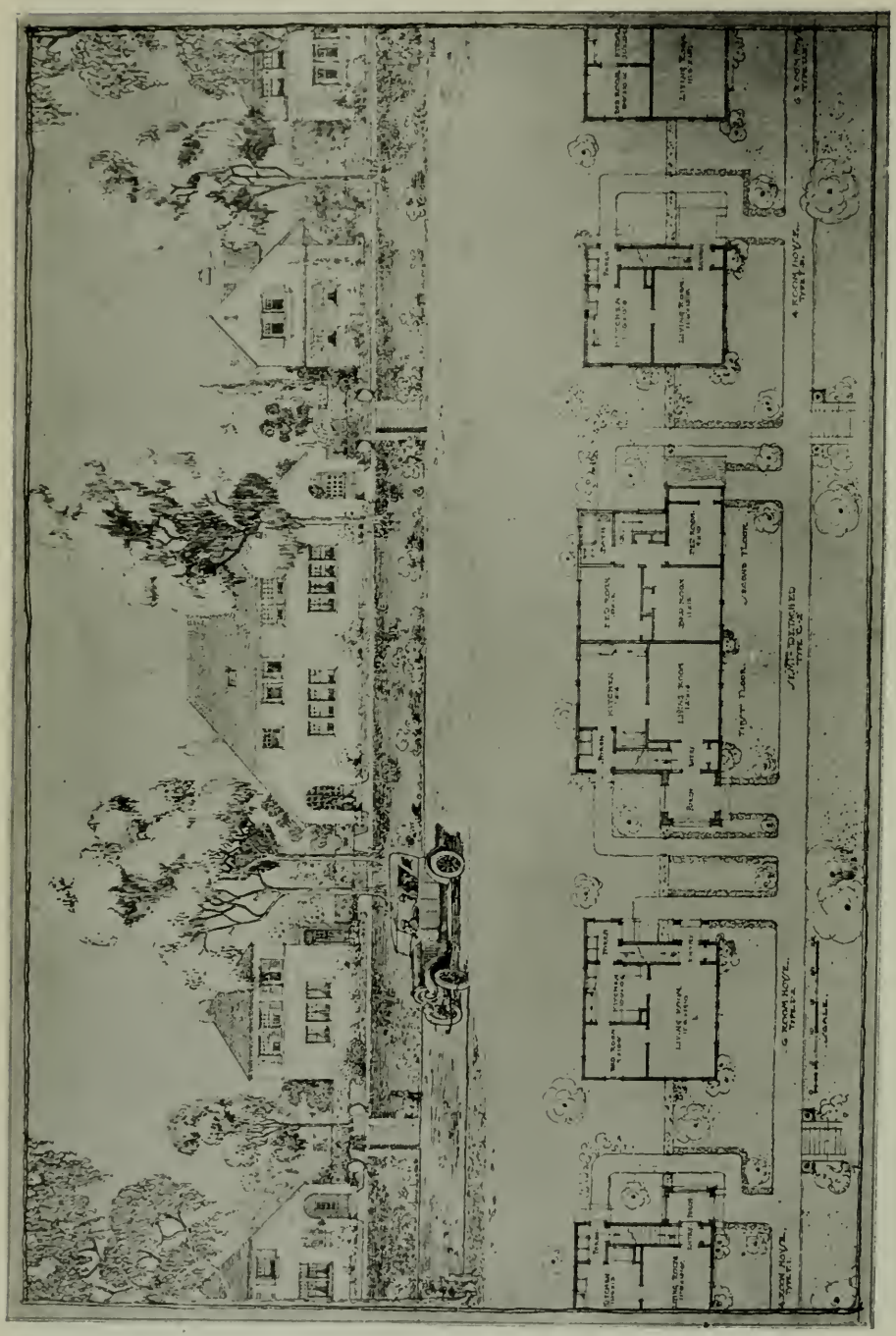
One feature generally found, and always important, in the complete housing project, but which is missing in the Vallejo scheme, is the commercial centre,



GENERAL PLAN, INDUSTRIAL HOUSING PROJECT, VALLEJO, CALIFORNIA
GEO. W. KELHAM, ARCHITECT
STEPHEN E. KIEFFER, PROJECT ENGINEER
PERCY R. JONES, TOWN PLANNER



THREE AND FOUR-ROOM APARTMENTS, INDUSTRIAL HOUSING PROJECT, VALLEJO, CALIFORNIA
GEO. W. KELHAM, ARCHITECT



HOUSES FOR WORKINGMEN, INDUSTRIAL HOUSING PROJECT, VALLEJO, CALIFORNIA
GEO. W. KELHAM, ARCHITECT

for already there are ample stores in the old town, and no provision of this sort is yet made here. But the important consideration of school facilities is being looked after and an excellent little school house design is one of the buildings in contemplation. The school building is, of course, so planned as to be easily enlarged and extended with the growth of the settlement, and it may be used for general assemblies as well. Churches, motion-picture theatres and other amusements already exist in the near neighborhood, and are not matters for immediate concern; although they may, any or all of them, come with later developments, for it is not to be assumed that any housing scheme is so stiff and inflexible as to forbid the assignment of a suitable site when there comes a real and reasonable demand for a building not shown in the original plan.

It is to be regretted that there are not more illustrations to show the distinguished character of many of the buildings which comprise this scheme. The general plan, of course, gives an excellent idea of the project, especially in the light of Mr. Kieffer's description of the utilities, which accompanies this article. But there is such promise in the town planning scheme of Mr. Percy R. Jones, and the landscape and garden work of Mr. Emanuel T. Mische, and such charm and quality in Mr. Kelham's designs for the buildings themselves, that one is eager to see how closely the dream is realized—when these pleasing plans have become, instead, houses fit for clean-living and clear-thinking American men and women to make their homes.

There will be quite a little variety given to the exteriors of these houses, even though there are not a great many variations in plan. Several studies of entrances, porches, roofing schemes and similar details, together with the uses of different materials, will all serve to give piquancy to the whole. And to the work of the architect, landscape architect, and engineer, we may confidently add the work that Nature will do, with almost uncanny rapidity, under the California sun. Six months, and the gardens will be well established; two years, and they will have the look of a decade's growing!

It is well to think of this scheme, not as an emergency need only: of something to be swept aside when an emergency is past. Mare Island Navy Yard is in fact a long established "going concern." And so it is doubly necessary that the thought of reasonable permanence be kept in mind. But all of the impetus given to the cause of Industrial Housing, through the recent emergencies, will tend to prove up the inherent soundness in the concept that man *does* respond to his physical environment.

In the sudden expansion of industries to meet the war's demands, inevitably some plants have been built in locations that are not desirable for peace industries, as well as for products the need for which has already ceased with the ending of the war, and many such plants are not convertible for other industries if they have to enter into competition with others already established. Wherever possible the Government authorities and private owners have foreseen the ephemeral nature of these plants and have therefore put up temporary buildings only. But it is not likely that all such cases have been anticipated, and without doubt there will be instances of abandoned industries, and possibly many of them. With such abandonment of the plants will come the desertion of the villages. So, later on, we must be slow in judging the success of housing schemes in general from an experience in some deserted village in particular; it will be no proof that the housing scheme itself lacked merit or was in any way at fault. We all know of instances in our eastern states of little, old industrial hamlets, long ago built around perhaps an iron forge or foundry, perhaps a flour, knitting, paper or saw mill in the earlier days when industries were more individual than they now are. These towns were located in neighborhood centers near raw materials and they produced for local consumption. They were

at cross roads on the highways, or along some now silted and overgrown canal or shallow-draft waterway. Then came the day of railroads, vast commerce and centralized markets; these little settlements were eddied back and left as flotsam in that most helpless of conditions "without outlet"—for no power is more merciless than big business. And now mill and housing alike have gone to ruin. The writer knows one such deserted village in southeastern New Jersey, in which the workmen's houses, with their quaint old-fashioned gardens of 1830, if kept up, would be a Paradise today. But, charming as these houses are, they fall to ruin and the weeds choke their roses—because the by-pass of traffic has choked their once bustling trade.

Data on Utilities for Project No. 581 Vallejo, California, United States Housing Corporation

By STEPHEN E. KIEFFER, M. AM. SOC. C. E., Project Engineer.

Because of the somewhat isolated location of the project and the fact that it was just beyond the present limits of the plants of the various utility companies, and outside of the city limits of Vallejo, it was necessary to consider the project as an independent townsite development for which original provision for every utility had to be made. These were planned in conjunction with the general layout as a comprehensive whole.

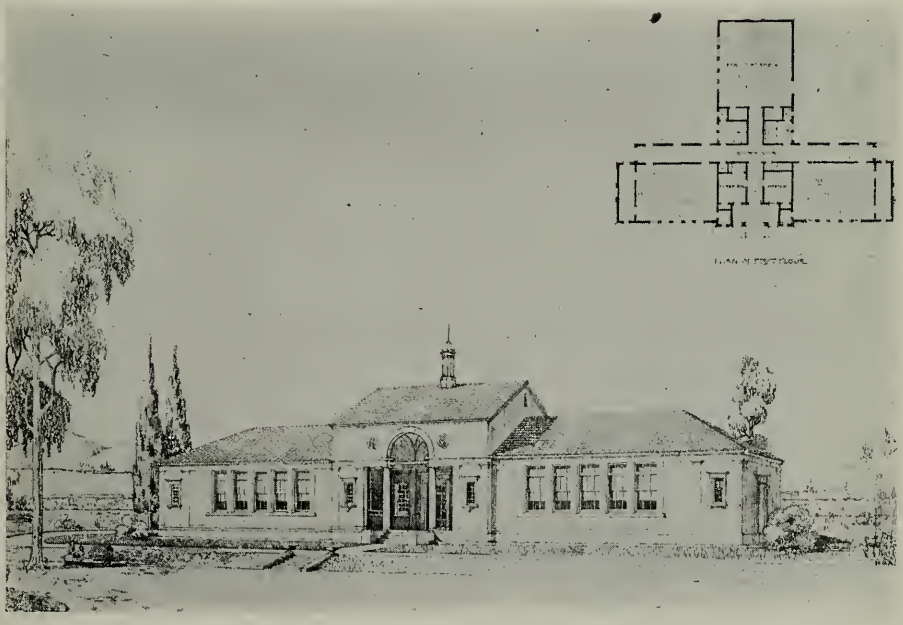
The first problem to be considered was that of the general character of the utilities in their relation to permanence of construction. The project being one which was regarded as an adjunct of the Mare Island Navy Yard its permanency was assured, and the type of construction adopted was of a more durable character than that which might otherwise have obtained. At the same time it was necessary to keep in view the fact that costs would have to be held within certain standard limits determined by the value of the project as an investment. The side hill location of the streets necessitated heavy grading and the street paving demanded was of a type that would withstand moderately heavy traffic on fairly steep gradients, with adequate provision for heavy surface storm drainage.

The location of all houses being definitely known, it was possible to plan and construct simultaneously the utilities and house services for water, gas and electricity, so that when the street paving is completed and the project cleaned up there will be no further necessity for experiencing the later tearing up process for the installation of additional utilities, which is so common in most municipalities.

The width of streets between curbs ranges from 20 to 30 feet, with 24 feet as the standard width for all average streets. The type of paving selected is that of 5-inch concrete base finished with a ½-inch oiled screenings surface, thoroughly rolled. Street curbs throughout are of concrete with standard cross section and finish. The sidewalks vary in width from 3½ to 5 feet and are of standard cement construction. Owing to the great range in elevation of the houses on the upper and lower sides of most of the streets the sidewalks are elevated and depressed above the street curbs to conform to the lot elevations in front of the houses. This elevation of the walks in some places is as much as 10 feet. The curb line is connected with the sidewalks by flights of cement steps. Construction of all house entrance walks and steps and tradesmen walks will be carried out simultaneously with the construction of the street sidewalks. The total extent of these improvements is as follows: Street paving, 252,212 square feet; curbs, 11,053 linear feet, and sidewalks, 74,100 square feet.

This project being an adjunct of the Mare Island Navy Yard the water supply is obtained through and delivered by the Navy Yard. At the present

THREE-ROOM APARTMENTS, INDUSTRIAL HOUSING PROJECT, VALLEJO, CALIFORNIA
Geo. W. Kelham, Architect



DESIGN FOR SCHOOL, INDUSTRIAL HOUSING PROJECT, VALLEJO, CALIFORNIA
Geo. W. Kelham, Architect

time the Navy Yard is obtaining its water supply from a series of wells and pumping plants some miles distant, near Cordelia. This water is pumped into the main supply pipe of the City of Vallejo and delivered through the city mains to the supply main which crosses Mare Island Strait from Vallejo to the Navy Yard. This Navy Yard supply main has been tapped on the Vallejo side of the strait for the use of this project, and water is delivered to it from this source. At the point of delivery a normal water pressure of 70 lbs. per square inch is available, but this is not sufficient to afford complete fire protection. The elevation of the houses in the project ranges from 20 feet to 120 feet above sea. The volume of water assigned to the project for domestic consumption is 100 gallons per capita per day for all families and 40 gallons per capita for the occupants of the dormitories. The entire tract is piped with Class "C" cast iron pipe of sufficient size to guarantee ample fire service and to provide for future extensions of the project. Fire protection is assured by the construction of a 500,000 gallon storage reservoir on the highest point of the property at an elevation of 210 feet. Water will be delivered to this storage reservoir from the supply main by means of a duplicate pumping plant, each pumping unit of which will have a delivery capacity of 600 g. p. m. under a maximum head of 250 feet. These pumps are controlled both by hand and by very interesting automatic electric control apparatus. Standard two-way Corey fire hydrants are installed throughout in such a manner as to enable four 250-gallon fire streams to be delivered at any one point at the same time with a minimum length of hose. A Ford hose reel wagon equipped with chemical fire fighting apparatus is also provided. Service pipes are installed from the mains in the streets to each house. These services are of standard construction, with goose neck connections, and are equipped at the curb line with Trident water meters. All water entering the project is metered after leaving the city mains through a Venturi meter equipped with a Simplex recording apparatus. Individual meters measure all water from the distributing mains to the consumers.

The entire tract is sewered in conformance with the most modern practice. All house services are connected up with the mains as they are constructed. The dormitory and house sections of the project each have separate outfall sewers extending into the tidal water of Mare Island Strait. The main outfall sewers are built sufficiently large to provide for any future extensions of the project.

A complete system of 4-inch and 6-inch gas mains has been installed throughout the project for the distribution of low pressure gas for heating and lighting. All gas services have been carried to the houses as in the case of the other utilities. Individual gas meters are installed in each house. For the most part the water and gas pipes have been carried in the same trenches.

The system of street lighting adopted is that of single globe electroliers placed along the curbs at intervals determined by the curvature of the streets. The maximum spacing of standards is 250 feet, with an average spacing of about 190 feet. Each standard is equipped with a 400 C. P. lamp. The wiring for the street lighting system is carried throughout in underground conduits laid in the sidewalk area between the curb and walk.

All electricity for house lighting, or other use, is carried by means of aerial circuits upon pole lines placed at the rear lot lines between the houses, with aerial drops from the poles to the houses. All street crossings of the house lighting system are made by carrying cables through underground conduits from the nearest adjoining poles. The average length of these underground crossings is about 250 feet. At no point is there an overhead wire crossing on any of the streets. Electric current is furnished from the central switchboard of the Mare Island Navy Yard to the transformer station of the project, which

is located at the pumping station. All lighting circuits for the dormitory section, both for street and house lighting, are carried in underground conduits. For this section there are no pole lines or aerial circuits of any kind.

Telephone service will be provided throughout the project. The aerial cables will be carried upon the poles at the rear of the lots with aerial drops to the houses. All telephones will be carried across the streets in underground conduits.

The utilities for the project are of the highest type and above the average to be found in projects of this size. When finished the project will be complete in every respect, and every public convenience will have been offered the residents which could possibly be found in the most modern and thoroughly built municipality. The administration and operation of all utilities, except telephones, will be under the direct control of the United States Housing Corporation.

*
* *

Selling to the Architect

"I COULDN'T get to see him," is a report commonly made by salesmen who are instructed to see architects and induce them to specify certain materials.

It wasn't very many years ago that it was very easy to see architects with almost any kind of a proposition. Then, as competitive materials began to multiply, architects found their time so taken up by salesmen that they learned at the end of the week that their working hours had been largely consumed in interviews.

The average architect wants information. He wants to know the latest developments in building materials and accessories. Maybe he has been figuring some problem for years and he suddenly and unexpectedly comes across some manufactured product that just meets his needs. The live, up-to-date architect doesn't want to overlook any chances, but, on the other hand, his time is so fully occupied by his work that he simply cannot, in times when there is an ordinary amount of construction, devote several hours a day to listening to the stories of salesmen.

Nearly every architect reads journals of his profession. Nearly all of them read advertising in both architectural and construction journals. The tendency among architects, and also among contractors, is to depend more and more upon periodicals for information—to scan them more closely.

When a salesman calls upon an architect the suggestion has been made, and it is undoubtedly a good one, that he should have a specific job in mind. Don't take up an architect's time talking generalities. Get all the information possible about the job before you call on the architect. If necessary visit the site, learn the name of the owner, get any facts that are available about this particular job, and then lay your proposition plainly, clearly and briefly before the architect. * * *

Don't be a bore, and don't get too familiar. Very few men like excessive familiarity at the first visit. Be dignified and courteous, but don't try to assume an attitude of good fellowship. Don't be effusive. On the other hand, don't freeze the man to whom you are talking. Just present your facts as simply and plainly and forcibly as possible.—Improvement Bulletin.

HOUSES FOR WORKINGMEN, PUGET SOUND NAVY YARD, BREMERTON, WASH.
A. H. Albertson, Architect

Government Housing at Bremerton, Washington

By JAMES FORD.

WHILE the greater part of our industrial housing, designed and built for war needs, has been near the Atlantic seaboard, yet there are many inland developments, mostly to house workers in munition and chemical plants, and on the Pacific Coast we find important war towns being developed, mostly in connection with Emergency Fleet construction and naval activities.

The housing project now under construction at Bremerton, Washington, by the United States Housing Corporation, for housing of the industrial workers employed at Puget Sound Navy Yard, was begun only after a thorough investigation had shown that the housing congestion was too acute to be entirely relieved by transportation to nearby communities and by absorption of vacant rooms and houses,—in fact these measures already were being utilized to the utmost of their possibilities.

The work was entrusted to Mr. A. H. Albertson, architect of Seattle; Mr. E. T. Mische, town planner of Portland, Oregon, and Mr. George L. Sawyer, engineer of Spokane,—these men acting co-operatively as the Committee of Design of the project under the direction of the United States Housing Corporation. The town planner is in charge of locating the houses and of grading and planting about them. The engineer is concerned with the design and installation of all utilities, such as sewers, water mains and street lighting.

Simplicity in design and construction was the first consideration throughout the project. Contracts were let on September 9, 1918, and construction has proceeded so speedily that it is reasonable to say that by the time this article reaches its readers the greater part, if not all, of the buildings will be occupied by the navy yard workers.

After this project has become a live addition to the community, a survey of conditions here and in all other cities where housing for war needs has been built will prove very interesting in a sociological way to the general public as well as to housing specialists. It is well to consider the benefits that will accrue locally from these new cities and communities. Improved conditions are already apparent and new ideas of civic pride and organization are bound to spread beyond the confines of these war emergency towns. The large scale of the projects, as compared to previous private speculative developments, combined

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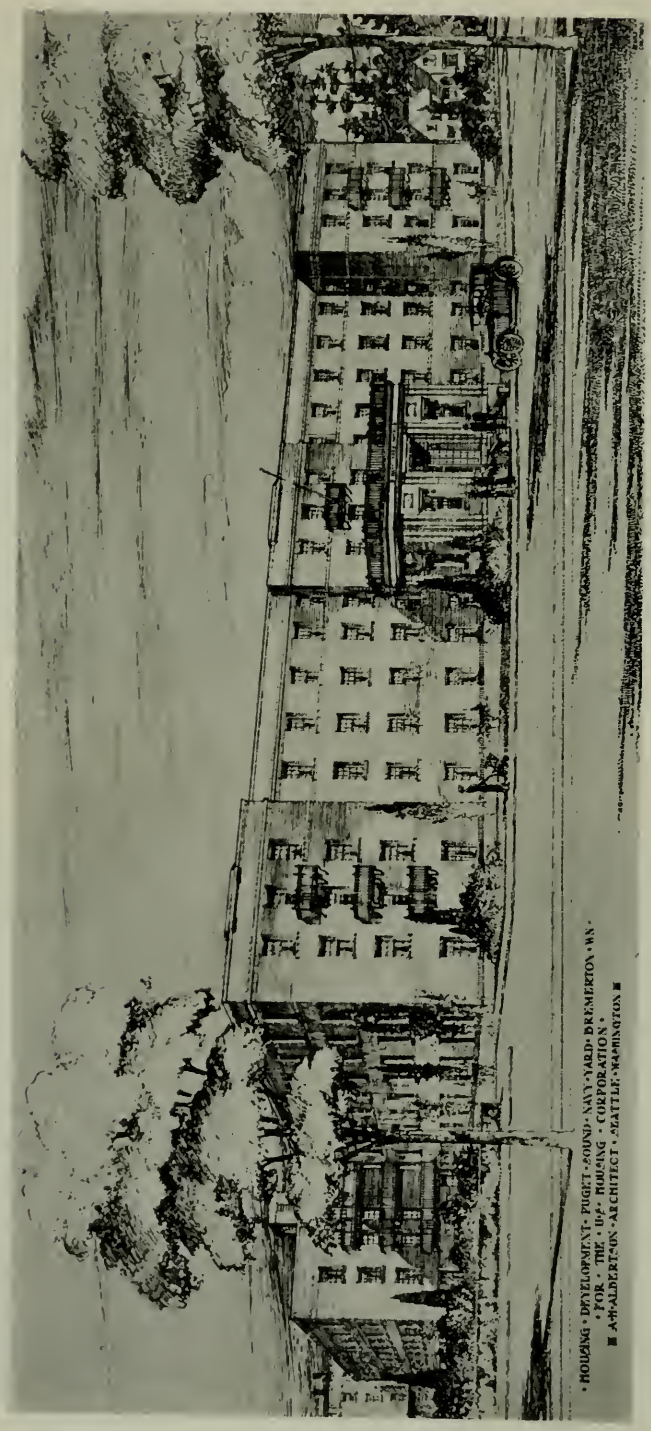
HOUSES FOR WORKINGMEN, BREMERTON, WASHINGTON
A. H. Albertson, Architect

HOUSES FOR WORKINGMEN, BREMERTON, WASHINGTON
A. H. Albertson, Architect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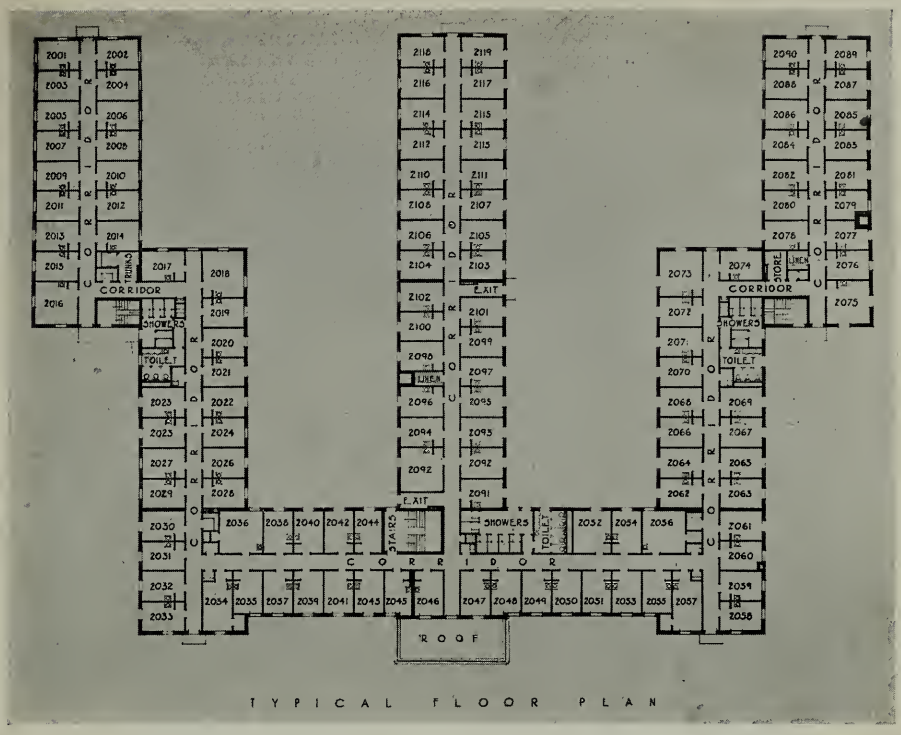
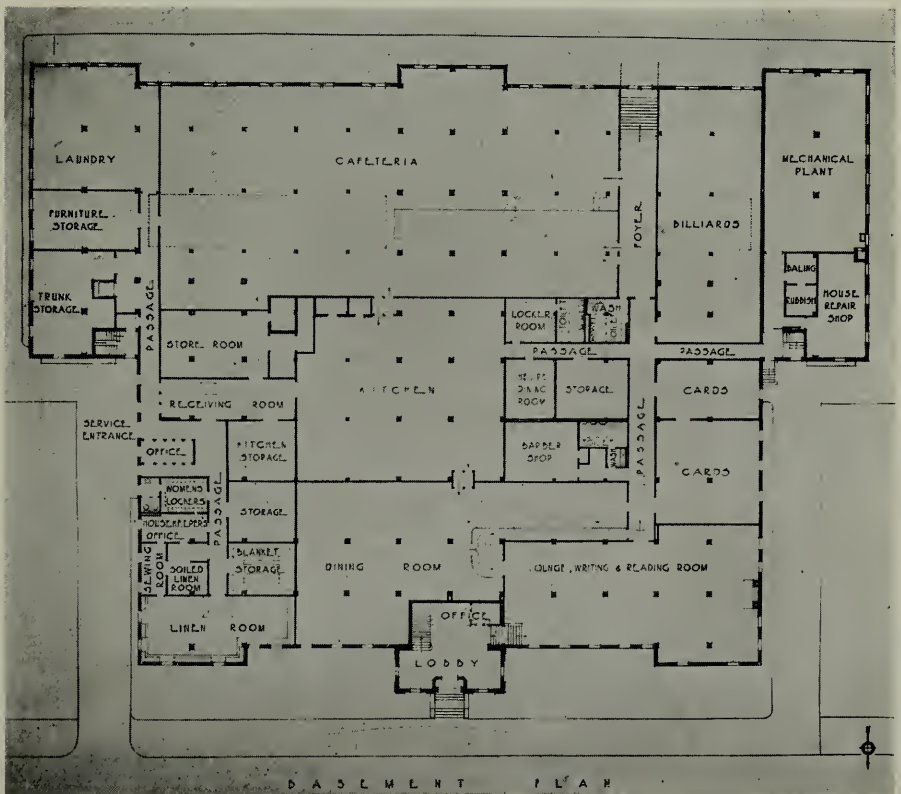
• FOR • THE • U.S. • HOUSING • CORPORATION •
■ A.H. ALBERTSON • ARCHITECT • SEATTLE • WASHINGTON ■

HOTEL, PUGET SOUND NAVY YARD, BREMERTON, WASHINGTON
A. H. ALBERTSON, ARCHITECT

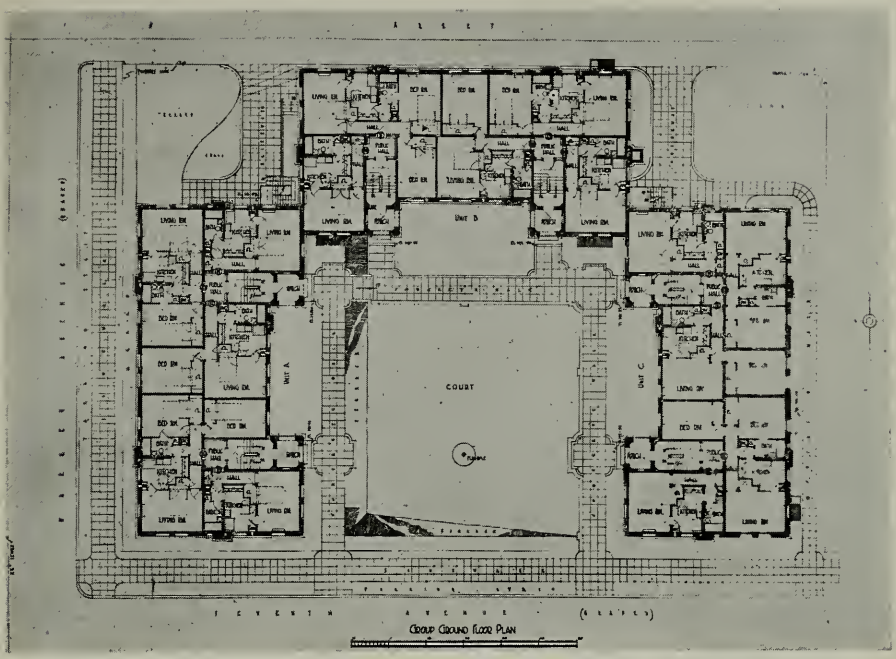




TYPICAL FLOOR AND BASEMENT PLANS OF HOTEL, PUGET SOUND NAVY YARD, BREMERTON, WASHINGTON

APARTMENT · HOUSE · FOR · PUGET · SOUND · NAVY · YARD
BREMERTON · WASHINGTON
FOR · THE · U.S. · HOUSING · CORPORATION
A. H. ALBERTSON · ARCHITECT · SEATTLE WASH.

APARTMENT HOUSE, PUGET SOUND
NAVY YARD, BREMERTON, WASHINGTON
A. H. ALBERTSON, ARCHITECT



GROUND FLOOR PLAN, APARTMENT HOUSE, BREMERTON, WASHINGTON
A. H. Albertson, Architect

with an appeal to patriotism, has afforded the opportunity of engaging high grade specialists, working co-operatively to an extent that professional jealousy and the lack of an urgent crisis had largely prevented before the war, with the result that better homes have been provided than had ever been attained in pre-war construction of this type. And this has been done economically and upon a sound and practical basis, notwithstanding the ever-increasing cost of building materials and wages.

This war-time emergency construction is bringing to the attention of manufacturers and municipalities the fact that a sufficiency of good housing attracts the worker and consequently draws new industries to the locality. It also furnishes a valuable criterion for industrial housing of the future. The beneficial effect of good housing upon the health, happiness and efficiency of the worker is being more generally realized. While much has been done in a short time it may be said that we are just beginning to solve this important and difficult problem. The entire elimination of slum districts throughout the land should be the goal. Housing for war needs has shown the way as no private enterprise could have shown it. It is to be hoped that we do not drop back to our pre-war somnolence, but rather that we benefit by the providential crisis that has awakened us.

The Bremerton development naturally divides into three sections, namely, the hotel, the apartment houses group (in three units) and 250 houses.

At Park avenue, between 3d and 4th streets, is located the Navy Yard Hotel. This building is being erected on a site separated only by the width of Third street from the Navy Yard. It covers 200x270 feet and is three stories and basement in height, with brick walls, concrete ground slab, with upper floors of laminated wood construction. The building has 360 sleeping rooms the average size of which is 9½x13½ feet. These rooms are provided with closets and wash basins. On each floor at central points, showers, baths and lavatories are

located. The main stairway is of concrete construction and enclosed in concrete walls having metal fireproof doors. The emergency stairways are built in the same manner, excepting that access to them is from an outside iron balcony connecting with the interior of the building. A freight elevator is provided for the handling of baggage and furniture. Each floor is divided into eight sections by brick fire walls extending from the ground floor through the roof, with automatic fire doors at each floor. Each section is provided with access to a fire escape or a tower stairway.

The main entrance to the building is on the Fourth street side, facing Park avenue, the lobby being located on a mezzanine floor between the basement and the first story. From the lobby, in which is located the usual desk and hotel equipment, access is had to the rooms above and to the recreational part of the building in the basement. This is composed of a large lounging room and reading room 33x83 feet; two card rooms are adjacent to the lounging room and a large room is also provided for billiards and pool. The barber shop and boot black stand are arranged for the convenience of the guests. A dining room and lunch room with cafeteria service, seating approximately 750, has been provided. A tunnel under Third street, connects the basement of the building to the Navy Yard, so that industrial workers may avail themselves of the lunch room.

Only half the height of the basement being below the ground, all of its rooms are amply lighted and ventilated. In addition, in the basement are located the mechanical plant, the kitchen, linen rooms, locker rooms, and all of the usual space for operating purposes.

The brickwork is a rough texture, wire cut brick of variegated color, buff and purple predominating. The coping and band courses are of cast cement, as are also the pilasters and other architectural features of the central motif.

The Apartment House is "U" shaped in plan, being in three units with a large open court facing the street. It is located at the corner of Seventh street and Warren avenue. The construction is similar in all respects to the hotel. The buildings contain 45 four-room apartments and a janitor's apartment; 27 three-room apartments and 18 two-room apartments. Each unit is served by two fireproof tower stairways. The apartments consist of living room, bedroom, kitchen and bath. The living rooms and bedrooms are provided with disappearing beds. The kitchens are equipped with electric ranges, sinks, cooling closets, the usual cupboards and bins; dumb waiters connect with the basement. In the basement are located trunk storage rooms, laundry and drying rooms, for the use of the tenants, and the mechanical plant.

Two hundred and fifty houses are being constructed upon property taken over by the United States Housing Corporation, scattered through the towns of Bremerton and Charleston, within walking distance of the Navy Yard. Many of these houses are located in groups of from three or four to eight and nine. Nine types of houses have been designed. Variations from each type have been effected by reversing the plans, thus securing eighteen types of plans. Further variation is secured in the exteriors by the use of shingles and sidings, thereby providing thirty-six variations in appearance. There are four types of one and a half story houses and five types of one story houses, of which three types of one story and two types of the one and a half story houses have fireplaces and basements with hot air heating systems. The remaining types are without these features. The houses have three, four and five rooms exclusive of bath rooms. They are all of frame construction with shingle roofs. Those having basements have concrete foundations. They are plastered throughout and finished in Washington fir. The houses are well provided with closets. The rooms are of ample size. The kitchens are fitted with all the necessary equipment for efficient housekeeping purposes, including in addition breakfast alcoves fitted with built-in seats and tables.

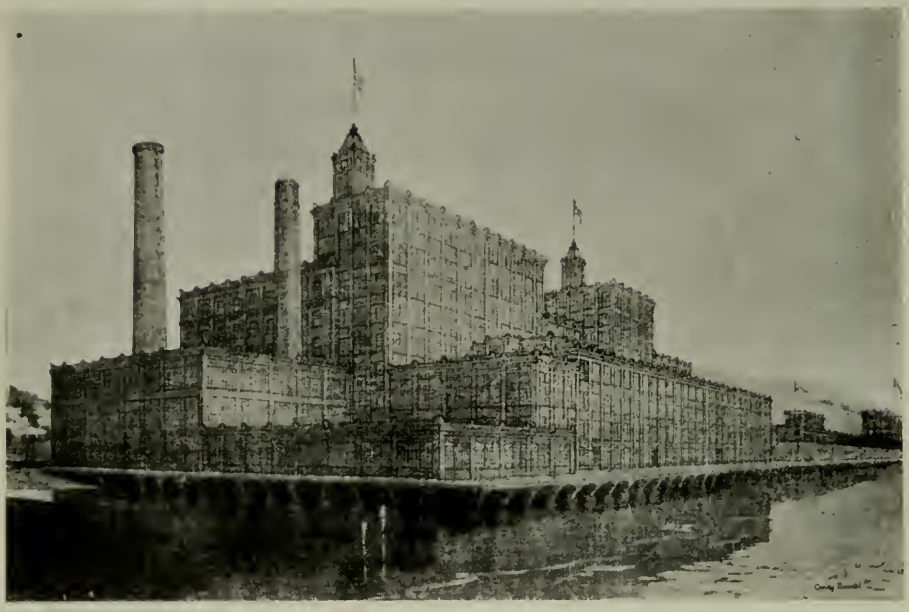
TOWN HALL, LOS GATOS, CALIFORNIA
W. H. Crim, Jr., Architect

Some Recent Work of William H. Crim, Jr.

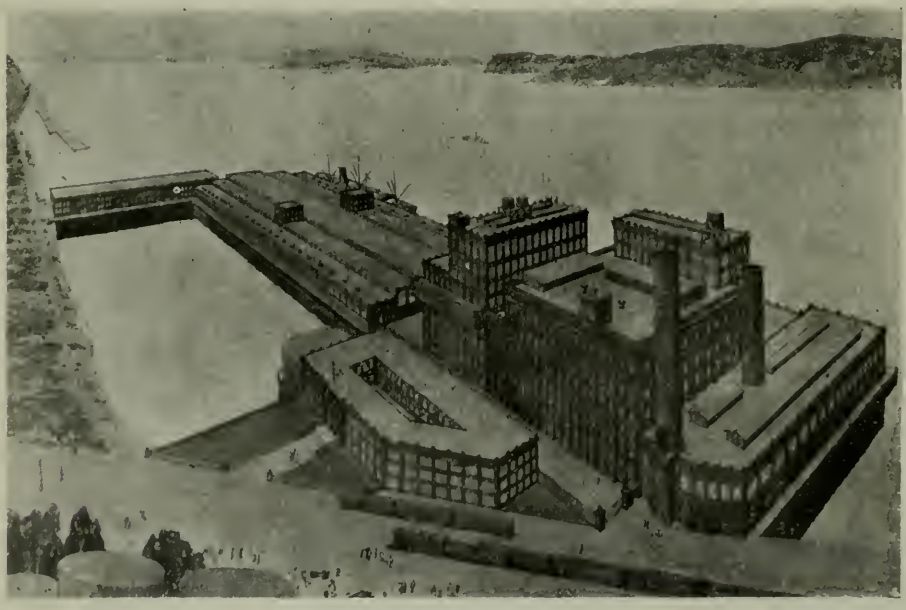
By FREDERICK JENNINGS.

THAT there is a growing tendency among leading architects of the country to organize their own construction forces, is apparent by the frequency with which such announcements lately have been made by architectural firms that heretofore have confined themselves strictly to the practice of their profession. A recent example is that of Mr. William H. Crim, Jr., who has declared his intention to surround himself with an organization that will not only develop plans for a building, but will carry the construction through to completion. Mr. Crim, by the way, is a pupil of Mr. Willis Polk, who was one of the first architects on the Pacific Coast to associate himself with a staff capable of carrying through a building project from drafting board to completion of a building. The old-time architect naturally does not take readily to an organization of this sort, because in his opinion it is not good ethics. He does not believe in mixing architecture with contracting. But where the combination has been tried the reports are always in its favor. Undoubtedly the thing which prevents more architects from making the venture, is the amount of capital required. To maintain an organization made up of men who are experts in the various branches of the building industry, involves an expense which only a few may safely undertake. It is the intention of Mr. Crim to expand his business in a modest way at the beginning, developing gradually as conditions warrant.

As the illustrations will show, Mr. Crim has had considerable experience in the past few years in industrial work, one of his best examples being the California-Hawaiian Sugar Refinery at Crockett. This plant was built with a view to permanency and absolute protection against fire, and it is without doubt one of the best built refineries on the Pacific Coast. Other industrial buildings designed by Mr. Crim include the Pacific Coast Envelope factory at Second



CALIFORNIA & HAWAIIAN SUGAR REFINING COMPANY, SAN FRANCISCO
W. H. Crim, Jr., Architect



CALIFORNIA & HAWAIIAN SUGAR REFINING COMPANY, CROCKETT
W. H. Crim, Jr., Architect

BUILDING FOR TOBACCO COMPANY OF CALIFORNIA, SAN FRANCISCO
W. H. Crim, Jr., Architect

BUILDING FOR PACIFIC COAST ENVELOPE COMPANY, SAN FRANCISCO
W. H. Crim, Jr., Architect

BUILDING FOR MR. BRUCE CORNWALL, SAN FRANCISCO
W. H. CRIM, JR., ARCHITECT

CRIM ESTATE BUILDING, MISSION STREET, SAN FRANCISCO
W. H. Crim, Jr., Architect

HOTEL BUILDING FOR MR. I. I. DE HAIL, SAN FRANCISCO
W. H. Crim, Jr., Architect

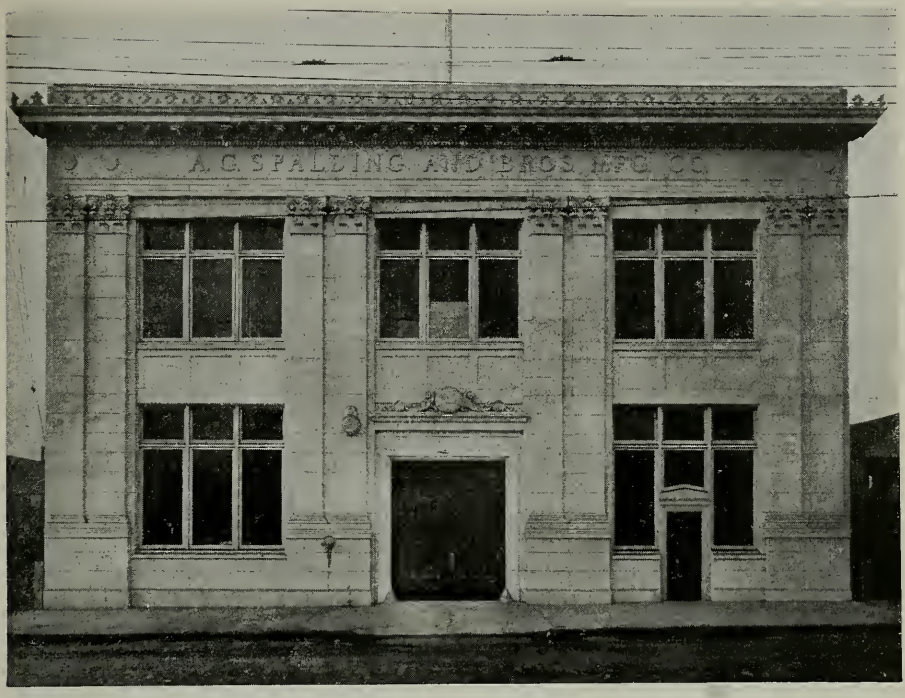
BUILDING FOR MR. T. C. VAN NESS, JR., SAN FRANCISCO
W. H. Crim, Jr., Architect

and Harrison streets, the Pacific Folding Paper Box works, the John Hoey Company's mattress factory, and a building for the Tobacco Company of California.

* * * *

In placing the recent work of an architect at the disposal of a magazine for publication, the actual criticism very naturally will come from the outside, but a foreword from the inside seems a happy compliment. For a number of years, Mr. Hamilton Murdock has been closely associated with Mr. Crim and his work, and it is from him that the following modest tribute comes:

"Perhaps the greatest asset an architect in his ascendency can have is the continued good will of his clients, and this has invariably been the case with Mr. Crim. Completed works are judged by so many standards that unless one hears of a final appraisement from client or someone familiar with all the problems involved, the verdict is likely to be not altogether complimentary. 'He builds too expensively.' 'He builds too cheaply.' 'It is beautiful but not practical.' 'It is commercial but homely,' and so on *ad infinitum*. To judge any piece of work one must have a complete history of the conditions imposed.



BUILDING FOR A. G. SPAULDING BROS. CO., SAN FRANCISCO
W. H. Crim, Jr., Architect

SWIMMING POOL, CLUB HOUSE, CALIFORNIA & HAWAIIAN SUGAR REFINING CO., CROCKETT, CALIFORNIA
W. H. Crim, Jr., Architect

SECOND CHURCH OF CHRIST, SCIENTIST, SAN FRANCISCO
W. H. Crim, Jr., Architect

INTERIOR OF SECOND CHURCH OF CHRIST, SCIENTIST, SAN FRANCISCO
W. H. Crim, Jr., Architect

COLUMBARIUM FOR MT. OLIVET CEMETERY ASSOCIATION
W. H. Crim, Jr., Architect

INTERIOR OF COLUMBARIUM, MT. OLIVET CEMETERY ASSOCIATION
W. H. Crim, Jr., Architect

MAUSOLEUM FOR MR. C. P. GIBBONS, HOLY CROSS CEMETERY
W. H. Crim, Jr., Architect

What kind of a competition jury would it be that had not mastered the details of the program? The architect's jury, after all, is his client, whose investment must be safeguarded to the extent that the project is made a commercial success as well as an architectural monument."

* * * *

In regard to the building outlook, Mr. Crim takes an optimistic view. He believes, as do many other architects, that we are on the eve of a great building revival. In conversation with the writer, Mr. Crim expressed himself as follows:

"During the period of the war building operations ceased almost entirely, due first, to the demand for materials for government use and the consequent upward tendency of prices, and second, to very large export shipments to the Allies.

"The country is still facing the condition that existed when construction operations first became affected, namely, high cost of building materials. It is true that a few reductions have been made on certain grades of lumber, steel, hardware and plumbing, but the drop has not been sufficient to impress the building public with any degree of confidence; in fact it has had an opposite effect in that it has led the investor to wait for a still further fall in prices. It is difficult to convince the investor that he is making a mistake in holding back. Prices are not going to fall perceptibly for a long time to come, in my opinion.

"It is unfortunate the investor cannot see his way clear to order his plans now. That would enable the architect to work out his problems to much better

RESIDENCE FOR MR. W. C. OESTING, SAN FRANCISCO
W. H. CRIM, JR., ARCHITECT

LIVING ROOM, RESIDENCE OF MR. W. C. OESTING, SAN FRANCISCO
W. H. Crim, Jr., Architect

advantage. He could get out his preliminary sketches, together with quantity estimates, and give the client some idea of the cost of his building. By co-operating with the real estate dealers, the two could readily determine how to advise their client, who then would be better able to enter into negotiations with prospective tenants.

"It seems to be a weakness of the architectural profession that they are insufficiently familiar with prices and materials, being prone to estimate by square foot or cubic foot methods, which are very unsatisfactory. I presume that ninety per cent of the architects, in making preliminary sketches for a project, send to a general contractor for an estimate of the cost of the building. My experience has been that the contractor usually cubed or squared the job, just like the architect, returning the plans without further interest, mindful that should the job go ahead, he would be required to submit a competitive bid.

"It is also true of many general contractors that they are not capable of making a sane estimate on the cost of a building without the co-operation of sub-contractors. To my mind it would be far better for the architectural profession to assume this responsibility of quantity estimating and familiarize itself with unit cost, charging a proper fee that would cover complete supervision of the job, the work to be carried on by segregated contracts in the minutest detail. I believe that this would bring conditions down to a thoroughly business proposition and eliminate speculation."

RESIDENCE OF MR. HARRY R. WILLIAR, SAN FRANCISCO
W. H. CRIM, JR., ARCHITECT

STAIRCASE, RESIDENCE OF MR. HARRY R. WILLIAR, SAN FRANCISCO
W. H. Crim, Jr., Architect

DRAWING ROOM, RESIDENCE OF MR. HARRY R. WILLIAR, SAN FRANCISCO
W. H. Crim, Jr., Architect

DINING ROOM, RESIDENCE OF MR. HARRY R. WILLIAR, SAN FRANCISCO
W. H. Crim, Jr., Architect

BEDROOM, RESIDENCE OF MR. HARRY R. WILLIAR, SAN FRANCISCO
W. H. Crim, Jr., Architect

ALTERATION FOR MR. R. K. BLAIR, ALAMEDA, CALIFORNIA
Hamilton Murdock, Architect

RESIDENCE OF MR. F. W. ERLIN, SAN MATEO, CALIFORNIA
W. H. Crim, Jr., Architect

STAIRCASE, RESIDENCE OF MR. F. W. ERLIN, SAN MATEO, CALIFORNIA

LIVING ROOM, RESIDENCE OF MR. F. W. ERLIN, SAN MATEO, CALIFORNIA
W. H. Crim, Jr., Architect

RESIDENCE FOR MR. LEONARD H. SCHWARTZ, SAN FRANCISCO
W. H. CRIM, JR., ARCHITECT

RESIDENCE FOR MR. JAMES H. ESCHEN, ALAMEDA
Hamilton Murdock, Architect

RESIDENCE FOR MR. GEO. T. CRANDALL, ALAMEDA
Hamilton Murdock, Architect

Fig. 1—Atlantus on the ways a few days before launching.

Explanatory Note.—Figures 1, 2 and 3 show the 3000-ton D. W. concrete cargo ship "Atlantus." This is the first concrete ocean-going ship launched by the Emergency Fleet Corporation. She was launched December 4, 1918, at Brunswick, Georgia.

Fig. 2—Stern frame and propeller connection.

Development of Concrete Ships by the Emergency Fleet Corporation

By H. J. BRUNNIER, Structural Engineer*

EARLY in nineteen eighteen the Emergency Fleet Corporation decided to develop the concrete ship as a war measure. Mr. R. J. Wig was selected as head of the concrete ship programme and instructed to prepare plans and specifications for a 3500 ton D. W. concrete cargo ship along the lines of a Standard Ferris Wood ship of same capacity.

Because of the enormous development of ship construction in this country, it was very difficult to obtain the services of naval architects, who were needed to guide the structural engineer in adapting this new material to ship construction. Structural Engineers of reinforced concrete experience were called on to solve the problem of the hull construction. Nearly all having their doubts, but all willing to tackle the job. Small craft and barges had previously been built and successfully operated, but large ocean-going ships were entirely different and their development, so far has brought out some very original and interesting results.

In the preliminary studies it was immediately apparent that in order to make the concrete ship practicable higher stresses would have to be used than those of standard practice. Therefore a large number of tests were made, the details of which are very illuminating and interesting, but would require a volume to properly describe. The results obtained warranted the use of the following unit stresses employed in the structural design of the concrete hulls now being built.

Concrete

1. Maximum unit compressive stress in the extreme fiber in flexure...1,500 lbs. per sq. in.
2. Maximum unit compressive stress in the extreme fiber in flexure, adjacent to support of a continuous or fixed ended beam.....1,700 lbs. per sq. in.
3. Maximum unit compressive stress in stanchions.....1,000 lbs. per sq. in.
4. Maximum unit shearing stress $\frac{V}{bjd}$ in tee beams and in shell or other slabs ..... 500 lbs. per sq. in.
   In isolated beams..... 300 lbs. per sq. in.
5. When the maximum unit shearing stress is less than 50 lbs. per sq. in., the concrete may be considered to carry all the shear.
6. When the unit shearing stress is greater than 50 lbs. per sq. in., reinforcement should be provided as follows:—
   (a) In the design of thin slabs, used as the webs of beams, with the shearing action perpendicular to any local shearing stress such as the shell, provide shear reinforcement according to the formula and the diagram prepared by W. A. Slater, and a formula for combining shear and local stresses.
   (b) In all other cases provide shear reinforcement to carry the full amount of the shear.
7. Maximum unit bond stress not over..... 160 lbs. per sq. in. for steel stresses to 16,000 lbs. and proportionally for other steel stresses.
8. $n - \frac{Es}{Ec} = 10$

Steel

1. Maximum unit tensile stress in all reinforcement except as stated below, not to exceed.....16,000 lbs. per sq. in.
   (a) In all bulkheads except collision bulkheads.....20,000 lbs. per sq. in.
   (b) In shell reinforcement exposed to water.....12,000 lbs. per sq. in.
   (c) Maximum unit tensile stress in top steel of keelsons due to combined local and hogging or sagging stresses not to exceed...20,000 lbs. per sq. in.

*Formerly Assistant Head of the Concrete Ship Department, Emergency Fleet Corporation. With Mr. Wig, Mr. Brunnier was in full charge of the Government's concrete ship programme. Mr. Brunnier recently resigned his post that he might return to his private practice in San Francisco.

FIG. 3—Atlantus tied up to pier after launching.

FIG. 4—Bottom frame steel of the Atlantus, built up as a unit on the ground and by means of a cable and rachet pulled together at top to facilitate placing frame inside the shell steel previously erected.

The concrete used is made up of one part cement, two-thirds part fine aggregate, one and one-third parts coarse. The maximum sized aggregate being that which will pass through a half-inch square screen and the cement of a standard make, except that ninety per cent must pass through the two hundred mesh. The concrete must obtain an average strength of 4,000 pounds per square inch in twenty-eight days.

A concrete hull of ordinary rock or gravel concrete is of lighter weight than a wood hull of same D. W. tonnage (contrary to general opinion) and in order that the concrete ship approach the efficiency of a steel ship, it soon became apparent that some light weight aggregate making a strong dense concrete must be developed. By accident while trying to make hollow aggregate, it was found that certain shales or clays would swell abnormally. On further investigation it was found that the product could be controlled and uniformly made. This puffed aggregate only weighing a thousand pounds to the cubic yard and making a concrete equal in every way to that of ordinary aggregate. This light weight concrete weighs one hundred pounds as against one hundred forty-five pounds per cubic foot of the ordinary.

Steel ships not having been developed on theoretical calculations, but rather from emphirical standards and experience, and, as reinforced concrete and steel have such different physical properties, much theoretical analysis was necessary. This necessitated the assumption of many conditions which might cause stress in a hull at sea. In order to get definite information on stresses an attempt is being made for the first time in the history of naval architecture (except for a single test reported by Biles), to establish experimentally a basis for scientific analysis of hull stresses.

For this the Strainograph, a recording strain gauge, has been developed and a recording pressure instrument specially adapted for measurement of wave pressure on the hull of a ship has been perfected. These instruments are operated by small electric motors, synchronized and controlled from a central switch. The records taken by these instruments give the exact stresses and pressures at any instant or period of time at all points where they are attached.

A small number of these instruments had been manufactured and were attached to certain points of the concrete ship "Faith" as she made her maiden trip to Seattle. At the launching of the "Atlantus" twenty-five Strainographs and thirteen pressure instruments were attached. Measurements are being taken on various types of ships and the resulting data will be of undoubted value to naval architecture and engineering.

The concrete ship department of the Emergency Fleet Corporation prepared plans for twenty-five hundred ton D. W. ocean-going concrete coal barge, for four thousand ton D. W. ocean-going concrete oil barge, concrete tug boat, and a one hundred ton derrick on a five hundred ton D. W. barge; but to date none of these have been constructed.

Also, plans were prepared for five hundred ton Erie Canal barge, of which twenty-one are being built and of which six are in service.

Also, for a three thousand ton D. W. concrete ship, of which one was built and launched December fourth at Brunswick, Georgia.

Also, for a thirty-five hundred ton D. W. concrete ship, of which one has been built and will be launched before this goes to press, and two more are under construction.

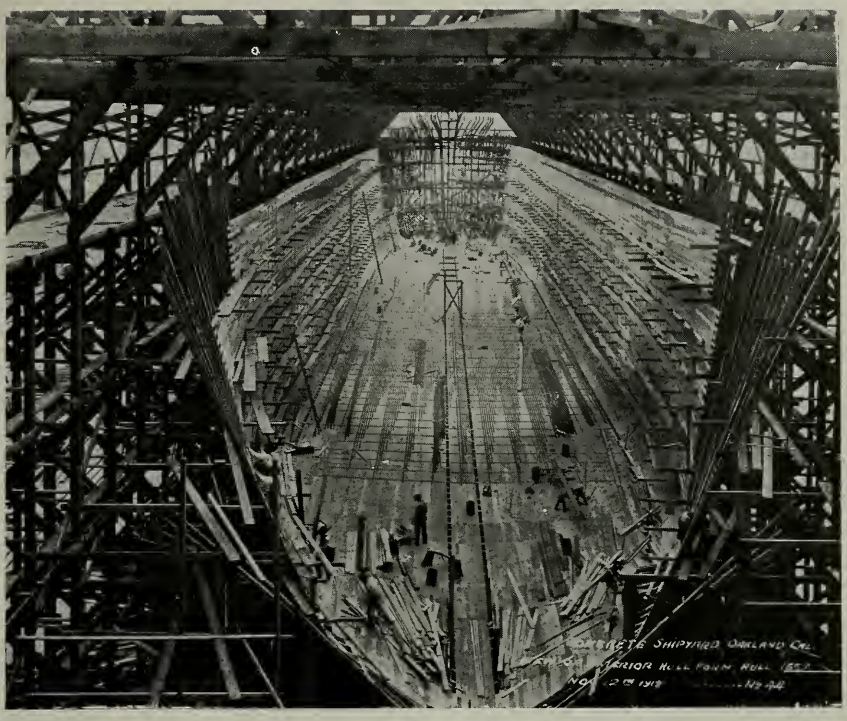
Also, for seventy-five hundred ton D. W. concrete oil tanker, of which eight are under construction and all to be launched in March, or sooner.

LOOKING AFT IN 7500-TON CONCRETE OIL TANKER, SHOWING STERN FRAME IN PLACE

Also, for a seventy-five hundred ton D. W. concrete cargo ship, of which two are to be built.

Originally, it was planned to build forty-two ocean-going concrete ships and five yards of four ways each, for the construction of these ships, were nearly completed at the time the armistice was signed. The construction of these yards was started in July, 1918, and completed would have cost about one million dollars each. For the construction of the above fourteen concrete ships only two ways in each yard are being used.

In conclusion, the present status of the concrete ship could not be better stated than the following portion of Mr. Wig's paper presented to the November (1918) meeting of the Society of Naval Architects and Marine Engineers:



Inside view of 7500-ton D. W. concrete oil tanker being built by San Francisco Ship Building Company, Superintendents for the Government, showing framing and forms for outside of boat. The placing of shell reinforcing steel has just begun.

"1. All analytical investigations so far made demonstrate that the concrete ship can be designed so as to carry all the strains which come upon a ship just as safely as a steel ship.

"2. The tare weight of a concrete hull has been reduced to such an extent by the development of a light weight aggregate that it has a proportionate carrying efficiency greater than wood ships and only slightly less than steel ships.

"3. All available experience with concrete ships to the present time does not demonstrate any structural weakness which might indicate unsoundness in the theory of design of concrete ships or probable limited life.

"4. While ships of small size are being built in many places throughout the world, the large ship (over 3,000 tons) is being developed in the United States.

"5. There is no perceptible difference in the frictional resistance offered by a concrete ship as compared with a steel ship.

"6. Our general knowledge of reinforced concrete as compared with steel structures makes the success of its further adoption for ship construction appear a certainty, but actual experience is lacking and therefore its future cannot be predicted with absolute certainty."

Industrial Housing as a Solution for Problems of Social Unrest

By NOBLE FOSTER HOGGSON,
President, Hoggson Brothers, Builders, New York.

THERE are two great movements, almost so closely related as to be one, either or both of which threaten this country. One is economic; the other social. The first is called retrenchment; the second Bolshevism.

To the extent that the continued spending of money for materials or waging war is concerned, now that it is won, the move for economy is well directed. But in carrying this project to the intended limit we would at the same time be destroying some of the great social betterments, the possibilities of which the war has brought to us. And by taking away privileges, rights, and benefits which mankind has gained through bloodshed we may, unwittingly perhaps, be producing an excuse for Bolshevism.

One rarely hears of workmen receiving "a fair day's wage for a fair day's work," who have the means to provide for their families in the way of homes, clothes, food, education and recreation, leaning to Bolshevism or the doctrine of excesses which gains its title from that word. A contented workman who receives even approximately a fair return on his labor strives for bettering the whole social condition rather than destroying one social structure in order to set up another.

A man holds his home sacred above all things. Take his home away—or the right to create a home—and you will produce wanderers living under conditions not fit for animals; such conditions we have witnessed in our own Northwest. The result is new members for the I. W. W.—incipient Bolshevists.

The war provided the greatest impetus to the movement for decent homes for employees. Under governmental auspices and direction, and with government money, plants engaged in war work undertook to create villages designed along model lines to house their workmen, and so reduce shifting of labor from place to place and cut down the cost of labor turn-over.

Our housing scheme developed during the war was not perfect; it was adapted to the occasion. Perhaps many of the newly created villages will soon be only a memory. But to ignore our housing needs in our future calculations will be no less than a calamity.

It is said that certain manufacturers believe labor will soon be so plentiful that it will occasion no trouble at all to get men for jobs of all sorts at whatever wages offered, and without the present consideration of housing accommodations. If this belief represents any considerable or important element of employers, it means that one of the principles for which this war was fought has not penetrated their consciousness. The consensus of opinion of the delegates to the convention held at Atlantic City last week—this convention bringing together the most important industries of the county—was that labor would be scarce and not over-plentiful, excepting temporarily in the districts where war work was being done. This congestion would be relieved almost immediately by the surplus returning to their vocations in their home localities. Employers who, with selfish thoughts only, expect to thus take advantage of a possible over-supply of labor, are short visioned and harmful to the successful solution of the future social state.

We must take care of housing our employees; we must provide homes for them. It is our duty to raise the standard of living. If there are class distinctions in this country, the best way to obliterate them is to co-operate with the workers, the great producing class, to assist them in becoming even more

useful to themselves and to the country by evincing an understanding of their hopes, desires and aspirations. That will require, first of all, sympathetic co-operation, and, second, a comprehensive plan of education. The most important step in the matter of education begins with the home. Improve living conditions; make homes things of comfort and attraction. The close of the war has not lessened the importance of housing; it has intensified it. Instead of dropping our housing plans we should greatly elaborate them. Peace industry requires the proper housing of workmen as well as did war industry.

At present there is apparently no comprehensive scheme backed by our government to assist and co-operate with industrial manufacturers and other agencies to begin new peace-time housing developments. It would seem that such a scheme is necessary and would require not only governmental aid in financing but governmental direction and supervision.

In his peace-time plan, Lloyd George of England has included the problem of housing and has given it a place of initial importance. One of the reasons for this is that England recognizes and expects to meet the grave employment situation. Yet Lloyd George is only following out a specific recommendation adopted in 1916 by the Joint Committee on Labor Problems After the War, which calls for the erection of "1,000,000 new dwellings," and states that "the 1,000,000 new dwellings" should be begun *the day after peace is declared*, but should be proceeded with, month by month, strictly in correspondence with the supply of building trades workmen, so as to leave practically *none of them at any time unemployed.*

Some recognized body, and preferably the government, should take immediate action on the problem of industrial housing in this country. The two urgent reasons are, first, the necessity of raising the standard of living of the workmen and providing a decent place for them to live in and raise a family; second, the necessity of affording employment to the mechanics from the demobilized army and from munitions plants. The solution of this problem will do more to counteract social unrest and the threat of Bolshevism than anything else.

* * *

A Query

Editor The Architect and Engineer:—The recent announcement by the largest manufacturers of heating, ventilating and steam fitting supplies of a reduction of twenty-five per cent (25%) in prices of their full line of goods is very interesting. It is a long step toward the rejuvenation of the now essential peace time building industries.

The increase in prices of manufactured articles caused by the war averaged between forty and sixty per cent. At the same time the war also resulted in greatly increased capacities for manufacture. Presuming that these enlarged plants are to be maintained at capacity, prices will have to come down in order to create a greater demand than now exists or is likely to occur under present conditions.

Many manufacturers had on hand and still have on hand goods produced before the war essential to ordinary or normal building operations. Demand for a great part of these goods was destroyed by the rulings of the war board as to non-essential building operations, but at the same time the manufacturers raised the prices of them along with the war-time essentials. These goods were produced at pre-war costs. Why not reduce them to pre-war prices as nearly as possible? Why not an immediate convention of manufacturers and labor leaders with a view to an agreement to a reasonable reduction in all prices and thus rehabilitate at an early date one of the greatest industries in the country—building?

CLARENCE R. WARD, Architect.

By Building Now, The Property Owner Will Help Create Era of Prosperity

BUILDING,—construction work,—has, almost over-night, leaped from a non-essential classification to the greatest of all activities. In the initial order of the War Industries Board lifting the ban on prohibited businesses and industries, construction work was first on the list of releases, and within a week all restrictions on private or public construction were removed.

That really was not surprising. Every student of the problems of reconstruction has predicted in his calculations that building would be the supreme activity of early peace times.

Every indication points to these predictions coming true. There is serious economic need for new buildings, mainly because the building industry has been depressed for years. There is an acute paucity of almost every kind of structure, ranging from small houses for workmen, increased peace-time factory and plant extensions, to banks, large hotels and office-buildings. Soon there will be an unprecedented rush of building. Architects will be given commissions that will flood their offices,—so long parched and dry,—and orders for plans will be numbered in the order of their receipt and taken care of in their respective turns. The manufacturers of building material will be utterly unable to fill the avalanche of orders, not alone for the construction work to be done in this country, but for the rebuilding of France and Belgium. Almost every ship that sails for Europe will carry a full cargo of building material, supplies and equipment.

It is idle to talk of awaiting the report of this commission or that commission to proceed with the work of reconstruction. Only the indolent-minded individual is content to sit back and wait for some body of men to do his thinking for him. The problem of reconstruction is an individual problem.

The man who has been intending to erect a new building or alter or remodel an existing structure, but who has deferred his work either because of the ban on construction or for certain other reasons, has exceptional opportunity for doing something definite in the matter *now*.

Many of the best authorities argue that the prices on building materials are not likely to make any decided change in the near future,—perhaps not for some years. On the other hand, it is possible, considering the high rentals prevailing, that a building erected now, at present prices of material and labor, will produce a greater return to the owner than a building erected two years hence.

From many points of view, economic as well as social, it seems propitious to have plans for building made now, so that every individual will at this time put into actual practice a bit of work that is going to be a step towards the great work to be done. Such action will help to stabilize industry in this period immediately preceding and which will follow the formal declaration of peace.

Let us build,—let us create,—let us stage the great drama of the city streets on every corner where a new building should rise on a vacant lot. Let us begin now our plans for reconstruction; our plans to provide employment for the returning warrior and for the loyal warriors who remained behind and helped make possible the great success of his brother in arms across the seas.

* * *

Eight Story Office Building

Mr. Norman Coulter, architect in the Maskey building, San Francisco, is preparing plans for an eight-story reinforced concrete office building to be erected in the business center of San Francisco at an estimated cost of $250,000.

The Architect of the Future

By S. N. CROWEN, A. I. A.*

THE architect occupies a unique position in that he is expected to represent a combination of art and business.

The education of an architect is usually along such lines that one is entirely separate and distinct from the other, and obviously many essentials are neglected.

We meet many architects who are not capable of successfully handling the business problems that frequently confront one in the profession. The artistic temperament of many architects is too well known to need discussion.

Good business demands that every possible effort be made to please the client in order that he may express his satisfaction to others and in this way indirectly secure for the architect additional clients. Under the past code of ethics an architect could not advertise well executed commissions so essential to the securing of a successful practice.

The supreme business factor today is the government. Through its power it controls practically all of the industrial activity of the country. The largest government building programme in its history is estimated to date to be one billion dollars since entering the war. Army warehouses, built or under construction in the United States, represent a total cost of $218,000,000, mostly permanent structures of steel and brick. In Chicago there are under way permanent warehouses constructed by the government representing approximately an expenditure of $7,250,000.

The architectural profession, as a profession, has not been employed in planning, designing and construction work, notwithstanding the fact that prominent members of the profession, as well as the American Institute of Architects, have from patriotic motives offered their services. The lack of confidence in the architect, evidenced by the failure of those in control, to entrust him with this huge building programme, was and is due largely to the business men of the country who were called upon by the Government to serve in this emergency, and their judgment was that contractors and construction engineers should be utilized and architects relegated to subordinate positions instead of being trusted as executives.

For more than a decade the attitude of the Government, as well as large business interests, towards the profession was well known as antagonistic, and yet the profession as a whole did not take any steps to meet these conditions.

No architect will contend that as an individual, he can, by his own efforts, plan, design and successfully construct large enterprises in the shortest possible time without maintaining an organization of experts versed in every branch of construction, and most important of all, having a strong administrative organization. With such an organization he can design and handle large building problems much more satisfactorily than anyone belonging to any other profession or business.

America's industrial greatness is due largely to the genius of the executives of our large corporations, who have maintained organizations capable of responding to the needs of the times.

After searching out the fundamentals in our professional and business life, and after making a thorough study of the economics of the situation, I submit the following:

The architect of the future must be a big executive, capable of surrounding himself with a corporate body of men who will assume business as well as

*From the Monthly Bulletin of the Illinois Society of Architects.

professional responsibilities, and render to the owner a complete financial transaction, furnishing the professional talent in architecture which embodies all branches of engineering, planning and construction. He must be financially responsible to the owner. Such an organization will be able to produce results which are satisfactory to the client and profitable to the architect.

The June issue of the Bulletin of the Illinois Society of Architects states that according to published reports of the Internal Revenue Office in Washington, only 120 architects in the entire United States scheduled incomes in excess of $3,000 for the year 1916, which year was still a normal building year.

The usual remuneration for architectural services under present conditions is entirely inadequate to make it possible for an architect to maintain the proper organization.

The first thing our Government looked for in its construction programme was speed, the demand of the hour, and ability to bring an organization into being over night; to produce a completed structure in the shortest possible time.

The large contracting organizations and the construction engineers were on the job with the necessary organization, while the architect leisurely looked on. The responsibility for this exclusion rests with the architect, as he has been a creature of professional ethics and not responsive to business conditions. Some of our most capable and noted structural engineers have corporate organizations with offices in various parts of the country and are doing work running into millions of dollars, and in addition are rendering personal services without remuneration to the Government, in various ways.

Many architects create a false impression by throwing the business responsibility upon the owner and contractor, hence he is considered only essential from the public viewpoint where monumental architecture is contemplated.

It hath been said, "Necessity opens the eyes to the advantage of fresh principles," and as I see it, it is the duty of architects to keep abreast of the times by at once organizing themselves to meet altered conditions and thus become the real leaders of the building industry, and whenever they do this they will undoubtedly receive government recognition as being essential, instead of as at present, a non-essential profession in the winning of the war.

In a current issue of Architecture on building cantonments, "A Record of Efficiency," by Mr. Paul Starrett, he states in substance: Considering the results which have been obtained by the Government in an emergency such as confronts the country, it would seem to be good business judgment to mobilize all of the ability and experience available in all lines. This would call for the employment, in building work for example, of tried building organizations, alloting the work in proportion to the known ability, experience and responsibility of the existing contracting firms. This is no time for experiments, etc.

There was no time to prepare carefully studied plans as the requirements of the army and navy and the various manufacturing plants demanded that the necessary buildings be constructed in the shortest possible time and it was necessary to start work on the various enterprises in such a way as to secure the quickest completion, studying out and completing plans as the work progressed.

Our leading architects were not employed to do this work. Why? The answer is plain:

First: It seems obvious that those in control of our building programme feared that the architect would sacrifice speed in favor of design, due to his alleged lack of business acumen.

Second: Under present conditions he depends almost entirely upon existing methods of contracting to produce results which are often beyond his control.

Third: All executives desire to do business direct with those whom they hold responsible for obtaining results.

From history we learn that the famed architects of antiquity were master builders and craftsmen, working with their own hands.

In France the law holds the architect responsible for ten years after the building is completed, hence I am suggesting a reverting to old methods, adapting same to new conditions. The architect of the future must have a strong organization that can plan, design and execute all branches of the work without resorting to the present time-worn methods. * * *

It is high time that architects should have the courage of their convictions by immediately in co-operation, meeting existing conditions and preparing themselves for the future by combining every thought with all their energy and resources, in order to be more efficient in producing results, which after all are the things that count. These things will be forced upon us whether we will have them or not. They will have us. *

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How Many Engineers Are There in America?

In Prof. Charles R. Mann's report on engineering education it is stated that up to 1870 the total number of graduates of all the engineering schools in America was 866, and that there were only 7,374 practicing engineers in 1870. Up to 1915 the total number of engineering graduates was 55,000, but 39,000 of these graduated subsequent to 1880. Prof. Mann estimates that there are 80,000 men who could qualify for membership in the four great national engineering societies, and that about 40,000 are graduates. We regard the 80,000 as an underestimate, for the census of 1910 indicates that there were more than that number eight years ago. The 1910 census shows:

Mechanical engineers	14,514
Mining engineers	6,930
Civil engineers and surveyors	52,033
Electricians and electrical engineers	135,519
Draftsmen	33,314

Although many of the draftsmen and surveyors could not qualify as engineers, and although almost none of the "electricians" could so qualify, it seems evident that fully 100,000 men could have qualified as engineers in 1910.

The total number of engineers recorded in the census doubled between 1890 and 1900, and it more than doubled between 1900 and 1910. There is reason to believe that the increase during the past eight years has been fully 50 per cent; for in the 10 years of 1901-1910 the engineering graduates numbered 21,000 as compared with 17,000 in the six years of 1911-1915.

It is our belief, comments Engineering and Contracting, that there are now fully 150,000 Americans who can qualify as engineers. The total membership in all the societies having headquarters in the Engineering Societies building in New York is 53,000, of whom about 30,000 are members of the four great national engineering societies.

* * *

Eracing Pencil Marks from Tracings

Pencil marks can be removed from inked-in tracings by means of a piece of felt moistened with gasoline. A convenient method of doing this is to tie a small piece of felt over the end of a medicine dropper filled with gasoline. By squeezing the bulb slightly the felt is kept wet. The felt is passed lightly over the pencil marks and erases them without dimming the ink lines.

Some Notes on Density and Uniformity

By CHARLES CRESSEY, Architect.

THE "over-worship" of density and uniformity as abstract virtues in building material, is one effect of the wave of sanitation that suggests study and possible modification. Anything hard, glassy, superfine or highly surfaced became, and still is, largely accepted as the material to be desired above all others. Non-absorbency as an ideal, appeals to most laymen, but building men may perhaps be following the lead too readily. This attitude grew, no doubt, from the habit of choosing building material by specimens and prepared samples. Laboratory experts furnish various tabulations of tests, chemical constituents and so on, which with comparison of samples in the office, take the place of the former visits to quarry, kiln or factory, or more particularly the careful inspection of material in existing buildings. Though old-time methods cannot now be conveniently followed, and the work of our laboratory friends is too valuable to require justification, it is imperative that we recognize and avoid a condition of mind which grows out of purely office methods and limits the mental range in choosing material.

Our forefathers used coarser materials and rougher surfaces for general building work than is common today, and it is doubtful that we can say, with all our scientific skill and capacity, that work under modern methods honestly resists depreciation, weathers nearly so well, so durably, or so pleasantly as the old. Hence the thought that density, smoothness and uniformity may perhaps be will-o-the-wisp ideals in some degree. One must admire the degree of perfection and finish now available in building material, often at surprisingly low cost, but this standard of perfection is the source of loss and waste to producers and buyers alike, particularly in kiln made goods.

War conditions roughened the texture of bread, with advantage to digestion, and homespun textures have displaced much fine-weave cloth. So should building material be made to meet the new conditions by a modified return to the older standards. The swing of the pendulum is already acting against the craze for flat uniformity of surface, and broken color in many materials is now well established. Though uniformity itself is largely a question of preference and taste, it is one of the most costly of demands to satisfy, involving an over-burden of "seconds" which have perhaps no defect other than the slight variations of surface and color, natural to the process of manufacture.

The demand for uniformity brought about a system of false facing and skin deep beauty which is directly opposed to permanence, and resulted also in hard, dense, unnatural surfaces, which have cursed the world for a generation with cold, unblinking intolerance. Maybe this, inspirationally, is the hidden "cause of the war"—It is bad enough, anyway. I was first moved to these thankless reflections by an instance in which density actually "made a parson swear." It was a case of bricks this time, most beautifully uniform red bricks, hard and non-absorbent as Old Nick's forehead, with a laboratory pedigree no one could refuse, and mortar fit for a jail wall;—but even the pedigree failed to keep out the rain, which, incidentally, spoiled much theology in book form.

It took a magnifying glass to detect the cleavage between mortar and brick, but that cleavage was enough under a continuous rain feed from the semi-vitrified facing, to form numerous water courses to the interior. An adjoining wall, of fairly porous common bricks and lime mortar, scarcely showed the trace of a shower, or ever troubled the interior. I have since traced a number of instances in brickwork, where the density, vitrifaction and smoothness of the brick, or the slop-over of enamel from the face, prevented key and adhesion

of the mortar, with consequent cleavage and dampness. As a remedy, coarse chiseling of the brick edges and repointing with only moderately packed mortar gave a measure of success.

That smooth, non-absorbent surfaces do not repel or discharge water in practice, nearly so well as do semi-rough or semi-porous ones, is to be noticed during rain by walking over alternate lengths of cement sidewalks, troweled to varying degrees of finish. The contrast is even more marked between highly finished cement and fine slab-stone walks, the film of water due to capillary attraction remaining unpleasantly for some time on the former, whilst the latter may be used in comparative comfort. This condition applies also to vertical walls, with a danger point at each joint. We may yet reverse our present methods and provide for exterior work, a non-porous backing or body to a semi-porous face, relying on air cells as repellents and open texture to aid quick drying. Most of us have been surprised at the amount of leakage possible through apparently insignificant cracks in dense concrete walls. Watch the early stages of a rain storm and note the continuous feed of water to a crack, by way of the non-porous wall face above. Yet roughly built, soft brick or stone walls often have much more serious cracks without leakage occurring. Non-absorbent surfaces are obviously satisfactory against leakage, so long as the surface remains perfect, but crackless perfection in walls is not a common experience and modern conditions of building, speed especially, do not justify reliance on perfection. Our aim, therefore, is perhaps wrongly directed, and greater provision for movement should displace tendencies to rigid, dense and monolithic building.

Few materials, artificial ones particularly, are nearly so inert as we lazily assume them to be, and the energy generated by heat and cold tends to disturbance and cracks. Dense rich mixtures of plaster for exteriors, are frequently self-destructive and perhaps cause the great percentage of minor depreciations in modern work. This trouble is more common on concrete walls where the body is dense and high grade and lies not merely in the lack of mechanical key, but in the energy of the differing compositions.

Perhaps the old workers knew something, when they broke up large surfaces by belt courses, not only to throw off the water stream at intervals, but to split up the areas of material into practical panels with safe joint lines. Noise transmission is a further sequence of some importance, to the use of dense materials and monolithic building.

Looking backwards, the result of non-absorbent "self-cleaning" facings for exteriors, has been below expectation. This is no reflection on the material or the manufacturers, but is a parallel case to trying to clean dirty plates by sprinkling with water. Just as the plate needs elbow grease, so the "self-cleaning" material needs the friction which it rarely or never can receive.

A glazed or vitrified exterior facing is very favorable to condensation and attracts dust, grease and soot, much as does plate glass when left without attention. The cellular or granular materials also take on dirt, but in crust form, which dries and flakes instead of remaining as a clinging film. The wonderful color effects of weathered brickwork and stonework, are rarely approached by non-absorbent facings. Incidental to this question, someone years ago explained that the dirt streaks on a ceiling, which occur between laths, are due to the greater density of material with consequent condensation and dust, the warmer parts under the wood laths remaining comparatively clean.

Presumably most of the troubles of the terra cotta maker come from the richness of the material needed to secure dense, hard blocks. To make this material stand the firing without warping, the clay is reduced to a series of thin

partitions, and the result is a triumph of mind over matter. Is the effort and cost worth while, compared with the practical terra cotta of ancient times? Our insistence on density and uniformity has changed the type and developed undue artificiality in terra cotta. Old terra cotta stood the test of time, still retains its hold on the mortar and is admired today, though its density hardness and brittleness is below present-day standards.

As a lover of terra cotta, I believe that its possibilities are scarcely touched, and it will do no harm to question the present costly desire for pottery-like shells, when probably coarser blocks with a natural homogeneous face, would give cheaper, better and more sincere building. Damp buildings are less due to absorbent materials than to the way in which the materials are used. In a district where sandstone "dry rubble" walls were common, I recall that dampness and leakage were unknown, until newcomers began to mortar and point. Interior work is less affected by this study of density than exterior work, but it is worth noting that material and surfaces accepted as easily cleaned, constantly cry out to be cleaned. That the cry "housewives' work is never done" is still common, suggests some attention to omitting the overnumerous condensing, and therefore dust holding, surfaces where strict sanitation and use does not demand same.

The old idea that walls should "breathe" holds a basic truth, which affects present housing problems and the choice of the many special materials available. Dense material is difficult to avoid where thin walls are insisted upon, but if thin construction has enough merit over older methods, some one will no doubt provide a practical "three-ply" material, where both faces are reasonably non-condensing and the core impervious. The chief thing is our attitude towards particular material or forms of construction, and the present common bias, without discrimination, in favor of density and uniformity is as unreasonable as would be a pretense against the obvious merits of those features where suitably applied.

* * *

Training Course in Naval Architecture

An intensive training course in naval architecture will be started at the University of Michigan and will run 11 weeks. Applicants should be graduates of civil, mechanical, electrical, mining or architectural engineering courses; or, if not graduates, should have had the equivalent of such training. Consideration will be given to men who have completed their junior year in college in any engineering course just mentioned. Applicants should have studied applied mechanics and mathematics, including calculus. The tuition is $32.25 for the course, payable to the University. Each student pays his own expenses. Applications should be made at once to Professor E. M. Bragg, Department of Naval Architecture, University of Michigan, Ann Arbor.

* * *

Improvements at the Fairmont

Messrs. Reid Bros., architects in the California-Pacific building, San Francisco, have completed plans and have bids under advisement for extensive improvements at the Hotel Fairmont. The work will include a concrete garage to accommodate 60 machines on Powell street, completion of the tunnel from Powell street to the main elevators, new entrance on California street, new cafe in the basement, conservatory adjoining the ball room, and various other betterments.

Reconstruction and the Building Industry*

By WILLIAM A. CALDER,
United States Senator from the State of New York.

IN order to understand the problems of reconstruction which the building industry is facing, it is necessary not only to review the factors which brought about a curtailment of building during the war, but to go back of that and study the condition of the industry just before the war. Even during this pre-war period there had been a gradual decline in building activities due to increasing costs of labor and material.

The history of the war orders of the past 13 months is well known to you. The first order issued by Judge Lovett, October 27, 1917, restricted the use of open cars. Then came Secretary McAdoo's demand for the cessation of all building not essential to the prosecution of the war or immediately necessary for domestic welfare, followed by the increasingly stringent rulings of the Fuel Administration, the War Industries Board and the Capital Issues Committee, and the position taken by the Department of Labor in classing building labor as non-essential. The most far-reaching orders of the War Industries Board were those affecting the building industry. The zero hour for building came when pledges were required of all material dealers and licenses of the non-war construction section of the War Industries Board for all buildings over $2,500.

The release of building work has been more rapid; beginning with a more liberal attitude toward housing projects, followed by the release of building under $10,000, the general removal of restrictions, and culminating in Mr. McAdoo's statement of November 17 urging civil construction and instructing the Supervising Architect of the Treasury Department to proceed with government work, and then Mr. Baruch's order of November 21 releasing all restrictions.

The present conditions in the building industry are similar to conditions before the war, but more acute. Costs of labor and material are still higher. The most favorable aspect of the situation lies in the increasing shortage of buildings of all types—constituting a potential demand for construction. Deferred building is part of the war debt, that is, it must be met before we can return to normal conditions. Construction is an essential industry and therefore a prerequisite to all normal business development. The natural inactivity of building in the fall and winter should give opportunity, in view of the shortage in all types of construction, for the gradual restoration of confidence in such investments, unretarded by fear because it does not come faster. The winter may also give those who are planning to build the opportunity for laying plans and choosing their materials.

The most unfavorable factor in the building outlook is the timidity of investment capital. This is a hang-over from pre-war conditions which still pervades finance. The effect of the war orders of the administration and the systematic discouragement of building by the Capital Issues Committee is still apparent. Another adverse factor is the restlessness of labor apart from the element of wages (since only 10 per cent of labor disputes in the building lines are over wages, the other 90 per cent being petty, jurisdictional or breach of contract), together with inefficiency due to government work and overtime standards. Transportation cannot be depended upon for efficient service and rates have increased to almost a prohibitive degree, although before the war 25 per cent of the carrying capacity of the railroads was devoted to building material.

*From an address delivered December 7 at the convention of the National Federation of Construction Industries.

Finally fuel, although released, is high and difficult to obtain, for the building industry consumes 30,000,000 tons out of the 425,000,000 produced by the country.

Now these factors are grave and might weigh in other less essential industries, but in building they are offset first, by the necessity of immediate housing for a large percentage of the population who are suffering through the high cost of living induced by building shortage, and second, by the encouragement which the government is now giving building. Secretary McAdoo regards the revival of the construction industry as essential to the country's welfare in its transition from a war to a peace basis, and former Governor Hughes, at a recent meeting of the Academy of Arts and Sciences, has urged an immediate country-wide survey of needed public construction.

But builders who are far-seeing and able to analyze the present situation realize that public construction alone will not bring the industry back to its normal position in the life of the nation. Government construction can only help as a transition measure, while private enterprise is slowly recovering its confidence and reabsorbing labor and materials. As an ultimate solution of the building prices, government construction alone will fail, because at most it can substitute but a small proportion of normal building; it will not relieve the present burden of taxation; and it will not supply buildings which bring reduction of rents and afford the necessary tools of industry.

On the whole, military and government housing construction has had an unfavorable influence on building. Government contracts have been let in large numbers. They have been let on a cost plus basis and they have been carried out without close supervision. Abnormal war requirements have set false precedents for the cost of materials and the cost and efficiency of labor. Continued government construction as a substitute for private enterprise will injure the industry, for the public work will absorb a fraction of our surplus labor and material and thus help to stabilize markets; it will maintain the present false standards which are now the greatest discouragement to private investment. Thus in the long run the total annual output of construction will not be caught up.

The remedy for these difficulties is the encouragement of private building which shall steadily and increasingly replace public construction and as rapidly as possible take over surplus labor and material and establish the industry on a sound economic basis.

The immediate problem, therefore, which confronts the building industry is to find a means of encouraging private construction. Two methods suggest themselves. First, the co-operation of the government should be secured, not only for the development of large public works, but more fundamentally in the encouragement of private investment. During the past year, from the time of the first restrictions on building until the day when the armistice was signed and rapid releases were made, the government, through a series of rulings and non-binding orders, carried on a vigorous publicity campaign designed to discourage all non-war construction. Now that the objects of the war are achieved and the time has come to build up the industry again, the government should through similar methods of publicity counteract the depressing effect which its war measures have had on capital, and thus hasten the return of normal conditions.

Aside from the benefits which will accrue directly to the building industry through the government's adoption of such a policy, will be its far reaching effect on the country as a whole. As a source of national revenue alone, the government would do well to restore the building industry by every means at its

command. Before the war the construction of the country, including increased land values, because of such construction, paid more than one-half of the taxes of the nation, if County, State and Federal budgets are included.

Before the war the industry employed over 2,000,000 men, all tax members of society. Since the war a greater portion of the total annual output of construction has been deferred on account of government restrictions, causing the loss of a sum equal to the entire estimated savings effected by price fixing.

The government should encourage private enterprise as the only solution of the serious social problems which spring from the high cost of living and the restlessness of labor.

But the restoration of the building industry cannot be brought about through government encouragement of private investment alone. A second measure which it seems imperative to take in this complex period of readjustment is the organization of the many diverse factors of the industry through a federation, flexible and yet strong and far-seeing enough to deal with the problems which are common to all branches of the industry. The very complexity of these problems today are evidence of the need of such unity and strength and co-operative effort as federation alone gives.

While there is an under-supply of building extending back over a period of years, there is insufficient demand to form a satisfactory basis in order to keep the industry in normal condition. For this purpose construction should total about $250,000,000 per month. It presumably will be a government policy to allow each industry to solve its own problems free from government regulations. Industries which have been enjoying war profits and the benefits of organization through war activity are better able to solve their own problems than is the building industry under present conditions. Unless the building industry takes on more than normal activity and produces in addition to current requirements, during the next two or three years, an additional amount of building construction, equal to that which has been deferred, the country will remain in a state of arrested development.

On a basis of an armed force of 4,000,000 men there are probably between 15,000,000 and 20,000,000 diverted from peace to war work. If the armed force is reduced to 1,000,000 men during the coming year there will be from 12,000,000 to 15,000,000 men free for the industries of peace. The maximum of labor shortage never exceeded between 1,000,000 and 2,000,000 men and at present there is little or no shortage.

While there is less than a normal supply of materials in the hands of manufacturers, there is an over-supply in the hands of the government which cannot be thrown on the market without breaking the market and throwing labor out of employment. Representatives of the War Industries Board estimated that the country was producing steel at the rate of 45,000,000 tons per year (on November 1); that this was practically all used for war purposes. The first half of 1918 the steel industry produced 17,000,000 tons, or at the rate of 34,000,000 tons annually. It is estimated that France will not need over 8,000,000 tons during the coming year, if as much. The use and sale of the surplus output must be arranged for unless the steel industry is to go into a condition of depression with unfavorable effect on labor and with sympathetic effect toward general building depression. Building industry will never absorb steel at the former rate per cubic foot, because reinforced concrete construction has become popular and requires but one-third the steel of ordinary steel construction, with a consequent saving of labor in steel production, transportation and erection.

Who is a Structural Engineer?

THE Illinois Structural Engineers' Association has asked the editor's assistance in framing a definition of Structural Engineer. The first step involves defining engineering.

An engineer is one whose vocation is the systematic study of science and the application thereof to problems of economic production.

In this definition the word "production" is to be used in its broadest economic sense. It even includes the effects produced by the military engineer; for while military engineering has for its ultimate object the defeat of an enemy, the attainment of that object is best assured by the application of science in an economic manner.

What is a structure? The following definitions are given in the leading American dictionaries:

Structure: That which is built or constructed; an edifice or building of any kind; in the widest sense, any production or piece of work artificially built up, or composed of parts joined together in some definite manner.—The Century Dictionary.

Structure: A combination of related parts, as a machine, a building, or a bridge.—The Standard Dictionary.

Structure: Something constructed or built, as a building, a dam, a bridge; especially a building of some size, an edifice.—Webster's Dictionary.

None of these definitions will meet the approval of structural engineers. A structural engineer does not ordinarily design machinery, yet the Standard Dictionary definition specifically includes a machine, and the other two definitions do not exclude machines from structures.

"A piece of work artificially built up or composed of parts joined together in some definite manner" is a definition that seems to include all engineering structures, but it also includes things that no engineer would characterize as a structure. A lady's hat would fall within this definition.

Before considering both what must be included and excluded from a specification of the word "structure," let us examine three definitions of Structural Engineering, each to be found under the head of Engineering:

Structural engineering includes the design and erection of modern large structures.—Webster's Dictionary.

Structural engineering, the designing and erection of large buildings, great bridges, and the like, especially those of steel.—The Standard Dictionary.

Structural engineering, the construction of bridges, aqueducts, foundations, steel frames for buildings, etc.—Prof. George F. Swain in Encyclopedia Americana.

Prof. Swain's definition is defective in that it merely names a few types of structures and ends with an "etc." that leaves full scope to the imagination—it does not specify. The other two definitions specify "large" structures. But what is large? And why limit structural engineering to large projects? None of the three definitions excludes contractors that are not engineers.

At the outset it should be recognized that every definition of structural engineering must be somewhat arbitrary.

The structural designer is necessarily an adept in the science of strains and stresses as applied to framed works, such as buildings and truss bridges; but his vocation does not limit him to framed structures. He may be called upon to design a concrete arch bridge, or a masonry retaining wall, neither of which is "framed," in the ordinary meaning of the word. Yet in designing either a concrete arch or a retaining wall, the science of strains and stresses must be applied. Indeed, we can not think of any class of structural engineering design that does not involve extensive application of the science of strains and stresses, whereas that science plays a relatively minor part in many other branches of

civil engineering. Therefore, it seems desirable to give prominence to the application of the science of elastic deformation of solids as one of the functions of the structural engineer. The word structure must be given a rather arbitrary significance if we are to exclude from structural engineering all kinds of work that fall within other classes of engineering. We must exclude earth dikes and reservoir embankments, sewers and water mains, for such "structures" are usually designed by hydraulic engineers. We must exclude engines, boilers, electric generators, electric transmission lines, and many other "structures," because they are usually designed by mechanical and electrical engineers. In fact, such a great variety of "structures" must be excluded that it becomes a hopeless task to specify in general terms that are not too general just what a structural engineering structure is.

Any attempt, says Engineering and Contracting, to define a structural engineering structure by merely enumerating the types of structures, such as buildings, bridges, etc., is not only unscientific but subject to change as new types come to be regarded as structural engineering structures.

A broad definition may be framed thus:

A structural engineer is an engineer who specializes in the application of the science of strains and stresses and in the economic use of labor and materials incident thereto.

In defense of this definition it can be said that while it does not draw a sharply defined line between structural engineers and other engineers, there is, in fact, no sharp line of demarkation. Also it may be pointed out that no other class of engineers specializes in strains and stresses and the economic problems associated therewith. The hydraulic engineer, for example, should understand the principles of elastic deformation, the strength of materials, etc., but he certainly need not be as deeply learned in these matters as is the structural engineer; and, conversely, the structural engineer need not be as skilled in the theory and economics in hydraulics as is the hydraulic engineer.

A structural engineer is primarily an engineer, or one who systematically applies science in an economic manner; but his specialty is the design and construction of those types of structures in which a knowledge of strains and stresses and the properties of materials is of paramount importance.

* * *

Depreciation of Office Buildings

After much research work in many leading cities the committee on Taxation of the National Association of Building Owners and Managers has reached the conclusion that the minimum annual depreciation of normal office buildings is 3 per cent of actual building cost for each of the first ten years, 2.5 per cent for the second 10 years, 2 per cent for the third 10 years, and thereafter doubtful. These figures are given by Mr. H. J. Burton, chairman of the committee, in a report to the Government Advisory Council of Real Estate Interests. The report also states:

"The best authorities consider that there is a steady and inevitable annual depreciation ranging from 1.5 to 2 per cent for the structural portion of the average modern office building, and from 7 to 10 per cent per annum for the mechanical plant and equipment. This makes the annual depreciation of the combined structure and plant 3.2 per cent per annum.

"The obsolescence of the ornamental and finishing work and of the architectural plan, which reduces the competitive earning capacity of the building, should also be allowed, and should be differentiated from the obsolescence or decadence of the location, which is reflected in the reduced land values."

Status of the Hetch Hetchy Water Supply Project of San Francisco

ON January 4, 1910, the citizens of San Francisco voted $45,000,000 for obtaining a mountain water supply from sources including Lake Eleanor and waters of Tuolumne river and vicinity. The total quantity of water to be ultimately diverted from the Tuolumne river for the supply of the San Francisco and East Bay Metropolitan District is 400,000,000 gallons daily, of which approximately half will go to San Francisco and the balance to East Bay cities, to San Jose, and the small communities in the district. It is intended that one-third of this total shall be made available in the initial development.

The works necessary to provide 133,000,000 gallons daily delivery to the Metropolitan District and 67,000,000 gallons daily delivery to San Francisco are as follows:

1. Low dam at Hetch Hetchy.

2. Nineteen miles of 400,000,000 gallons daily capacity pressure aqueduct, 10 feet 3 inches in diameter, with 8 feet fall per mile, from a point at Early Intake, 12 miles below Hetch Hetchy, to Priest reservoir, where a power drop of 1300 feet would create 66,000 mechanical horsepower.

3. Power drop to Moccasin creek.

4. Seventeen and one-half miles of 400,000,000 gallons daily capacity aqueduct tunnel, 10 feet 3 inches in diameter, from Moccasin creek to east side San Joaquin Valley.

5. Forty-five miles of 6 feet 10 inches diameter steel pipe across San Joaquin Valley, 133,000,000 gallons daily capacity.

6. Thirty-one and one-half miles of 10-foot tunnel through Diablo range to Irvington, 200,000,000 gallons daily capacity.

7. Thirty-one and one-half miles of pipe 6 feet 4 inches in diameter, capacity 67,000,000 gallons daily, and 20½ miles of tunnel, 200,000,000 gallons daily capacity, to San Francisco, making a total length of 156 miles.

The status of the project is outlined as follows in a report issued August 31:

A railroad 68 miles long has been built from Hetch Hetchy Junction, on the Sierra Railway, 26 miles northeast of Oakdale, to Hetch Hetchy Damsite, at a cost of approximately $2,000,000. This is a standard-gauge railway with 60-pound rails, capable of handling all freight on the work and bringing return freight of very nearly 2,000,000 tons of lumber, which is tributary to the road.

A 4000-horsepower hydro-electric power plant has been completed at Early Intake, 12 miles below Hetch Hetchy, which provides electricity for all the construction operations in the mountains.

A buttressed arch dam at Lake Eleanor, 64 feet high and 1200 feet long, has been constructed across the gorge one mile below the lake, which now has a capacity of double the size of Lake Chabot.

A power canal in tunnel aqueduct and in flume, 3 miles long, has been built from Cherry river to the power plant. This canal is fed in low periods of water flow by the released water from Lake Eleanor.

A power line has been built from Early Intake to Priest, a length of about 20 miles, and electricity is now conducted into all of the larger headings of the tunnel aqueduct, for lighting and construction use.

The main tunnel aqueduct has been started from Early Intake to Priest. Work is now proceeding (August) in three shifts on those portions of the work which will take the longest time to complete. This tunnel aqueduct will be 10 feet 3 inches in diameter, lined smoothly with concrete, capable of carrying 400,000,000 gallons of water per day.

Explorations and preparations have been made for construction of a large dam at Hetch Hetchy, and a low fore-bay dam at Priest, which will carry three days' flow of the aqueduct, thereby increasing the flexibility of the power plant, and a draft as high as 100,000 horsepower can be drawn at peak periods from the first large unit. The Hetch Hetchy dam will be 320 feet above the water surface in the stream, and an average of 65 feet below. A magnificent grade of granite bedrock exists on both walls of the canyon, and also in the underlying formation, which has been tested by diamond drill borings. The Hetch Hetchy dam will store 112,400,000 gallons of water, or five times the capacity of Crystal Springs Lake, over a territory covering nearly 1930 acres. A future larger dam at Lake Eleanor will be able to store 93,000,000 gallons of water in a reservoir of 1443 acres.

The entire aqueduct between Priest and San Francisco, passing south of Niles, has been located on the ground with concrete monuments, and maps for procuring right of way are prepared. A connection with the transbay cities can be made near Niles, a distance of 27 miles from Oakland.

Generally, all the more difficult portions of the work in the inaccessible mountains have been well started, and money may be spent now at the rate of $6,000,000 per year to complete the project. If this is done, water could be delivered to San Francisco inside of six years.

At the present time (August, 1918), due to war and labor conditions, none but the more difficult portions of the work are being proceeded with. With an early and satisfactory determination of the war, operations will be more actively prosecuted. The work is being carried out under the direction of Mr. M. M. O'Shaughnessy, City Engineer of San Francisco.

Writing to Engineering and Contracting regarding the recent epidemic of influenza in San Francisco and the health conditions of the city generally, City Engineer O'Shaughnessy says:

"The record of health statistics of the United States demonstrates that this city is above the average from a health standpoint. Ours is the hilliest city in the United States, ranging from sea level to 800 feet in height, hence no stagnant water rests anywhere in the city. Besides, a splendid modern system of arterial sewers has been constructed at a cost of $6,300,000, which is the most up-to-date in the United States. Before the modern era of 1900, when the new charter was adopted, the good old-fashioned street superintendent, who was elected by the public, had jurisdiction over the size of sewers, and a great many of the old sewers have been uniformly made of this size, 3 feet by 5 feet brick, regardless of the fact that an 8-inch or a 10-inch pipe would in most cases carry the drainage in small areas where those units were constructed. The present administration can assume no responsibility for the errors and malpractice of the past, which prevailed in most of our large cities before the value of the scientific sanitary engineer came to be appreciated.

"It is a noticeable fact that the influenza epidemic has hit San Francisco lighter than it did any other city, which attests not only the excellent sanitary conditions prevailing, but also the resistant physique of our inhabitants.

"We rather proudly claim precedence among other cities of having the best high pressure fire system in the United States, 72 miles in length, carrying 300 pounds pressure to the inch. This is necessary, as about two-thirds of our city is built of wood, and we get a rebate of $1,000,000 a year in insurance rates, which pays over 16 per cent on our investment for fire system costing to date about $6,000,000.

"We are the only city in the United States that has built and operated a municipality owned street railway system, costing about $7,000,000, at a profit. We have also spent $5,400,000 in traffic tunnels, have built the best group of municipal buildings in the Civic Center and in other ways take precedence in municipal activities in the United States."

* * *

How the Banker Can Lead the Way in the Problems of Reconstruction

THE greatest American humorist-philosopher since Mark Twain said the other day that this country would tear up the pavement for the first of our boys to come home, and arrest the last contingent for vagrancy. That is a bit of exaggeration which has its excuse for utterance in the notoriously short memory of our people as a whole. Great deeds and grand events become fixed in the mind, but unless the individuals responsible for those deeds and events be dead heroes or very conspicuously alive ones, they are soon forgotten. And the great mass of supporting common soldiery are out of mind almost before they enter our consciousness.

What is partly true of the returning men who dropped their tools of industry, who laid aside their pens and ledgers, who dropped the plow handles in the midst of an unfinished furrow to take up the arms of war, is also largely true of men and classes of men who fought their share of the battles on this side of the water.

Take the bankers; what set of men has done more valiant service during the last two years? But now that the war is over, these geniuses of finance seem almost to have been dropped from the reckoning.

Sociologists, professors of political science, labor leaders, politicians, diplomats and economists are very prominent with their solutions for the problems of reconstruction. Few, if any of them, accord the great bankers a high place in the affairs of this period. Yet no single class of men can and should play a more important part in the work of setting this country on its feet.

The banker, by precept, by example, must show the way. He must take the initiative. For instance, improvements to vacant property, erection of new structures and building construction work in general, are planned to be in the forefront of post-war activities.

Some one must take the lead. There will be enough,—too much, perhaps,—of the timid, pessimistic element which will want to "wait and see" before carrying out a proposed building operation. Therefore, if a bank has been struggling along, handling its business in cramped, antiquated, inadequate quarters, the directors can start the reconstruction movement into action by getting under way with their work at once. Not only should they have plans prepared and let the contract; they should give widest publicity to the fact that they are to have a new building. This publicity in the daily papers, in letters to investors, to other banks, folders to depositors and prospective depositors, would have the electrical effect of causing positive action on the part of other owners.

In practically every community, the bank reflects the prosperity and progressiveness of its locality, or the lack of those elements. Not alone in regard to investments is the banker looked to for guidance, but he is generally counted on to take the initiative in all civic improvements. Let a bank build a new business home; that is outward evidence of prosperity, and other owners will hearten and follow suit. If a bank, metaphorically, pulls a long face and defers improving its property, all the faint-hearted and some of the lion-hearted take their cue therefrom and wait for the bank to act first. Naturally, there follows depression instead of prosperity.

Former Secretary McAdoo is quoted as stating that construction work which has been delayed because of the necessities of war should be resumed immediately; that the resumption of construction work by the government will contribute toward facilitating the industrial transition of the country from a war to a peace basis, and should serve to encourage others to undertake without delay the fulfilment of the many and varied industrial peace needs of the country. A speedy return should therefore be made to construction, in the way of new buildings or modernizing old ones, so as to encourage industry in general to make that transition, to say nothing of conserving the interest of labor, which is also involved.

Some one has said, in the parlance of the Stock Exchange, "Be a 'bull' on America." Make work, show evidence of faith in the future of this country. Our banks are more prosperous than they have been for many years; there is more bank remodelling and new construction work needed than ever before. The sooner the work is begun, the sooner the bankers will evidence their faith in the future of this broad land of ours.

The great part the bankers can take in the period of reconstruction to complement the admirable work they performed in war time will not be in solemn conclaves in closed directors' rooms. It will be in the open diplomacy of practical demonstration in the form of a new building erected now while the outlook to so many is uncertain; a building that will be not only a lasting asset to the bank, but a civic and a spiritual asset as well.—N. F. H.

* * *

Only Architecture Dedicated to Truth Will Live

IN dedicating the new home of the Detroit News, designed by Mr. Albert Kohn, Mr. George G. Booth recently addressed the students of the departments of Journalism and Architecture at the University of Michigan on "The Spirit of Journalism and Architecture," saying in part:

And to you architects, you young men and women who have enlisted in that world of art which is dedicated to the service of the spirit of man's endeavors, your hopes and achievements are likewise on the threshold of the greatest era of art the world has ever witnessed. Art thrives where ideals live. In every walk of life there should be a deep purpose. In your buildings, truth should be manifest and indelible. This has been true to a large degree in the recent past.

A home should have stamped upon its face comfort, refinement, wholesomeness, hospitality, and when you enter the door there should be no doubt as to those qualities being true to the people who occupy the home.

A bank should bear upon its face security and honesty, typifying the fact of the practices within.

Churches should always indicate by the glory of the architect's conception the loftiness of the principles and ideals of true religion.

Architecture dedicated to truth will live, while an architecture of shams and other forms of deceit will fail to endure. You will find the grandest architecture of the past was developed when men had set themselves high ideals of life; when they were most earnest in the spiritual life. So again, as we are entering the new day of light, purified by the shedding of the life blood of millions of noble and unselfish men, your day of hope and opportunity is dawning. You are to mark, in enduring form, the era of a true democracy which shall aim not alone to insure to every man a voice in his own government and destiny, but that purer and more perfect democracy which will insure the greatest good for the greatest number of mankind, whatever form of government may be employed to that end.

San Jose Architect Writes of His Experiences Abroad

THE following interesting letter has been received from Private E. N. Curtis, of Binder & Curtis, architects of San Jose, who is in France with the Sixth Depot Division, Engineers Corps. The letter was written before the signing of the armistice:

Editor The Architect and Engineer of California:

No doubt Mr. Binder has told you of my safe arrival in France. Our trip across was very pleasant and we did not encounter any rough water. The only hostile fighting craft that we encountered were several schools of whales and sharks. Kaiser Bill's "tin fish" did not molest us in any way. We landed in England—that beautiful land of red brick, bridges and chimneys. England is a veritable bricklayer's paradise. We marched from the docks to the "rest camps" over roads paved with cobblestones. It was raining and the road slippery and I cursed the Kaiser every foot of the way, as did our entire outfit. You cannot imagine the task it is to carry all one's earthly possessions on one's back over such a road, shod as we are with heavy hob-nailed shoes. I know that I skidded half the way.

These so-called rest camps are well named. About all we rested was our stomachs. We had a beautiful trip across England to another rest camp and from there we left for France. Our trip across the channel was rather unpleasant. The beastly place was evidently excited, judging from the way we pitched and tossed. The boat we crossed on was a side-wheeler and resembled very much the ferries that run between San Francisco and Oakland. There was only one deck that was habitable, as the lower deck was lined with seasick Sammies, and I will leave it to your imagination to picture the mess.

I cannot tell you where we are located in France, as you probably know.

Our billet is fine—that is, as far as billets go. We are established for the present in a group of old farm buildings of uncertain age. One group near here is very picturesque, and while admiring the pile one afternoon had the good fortune to meet the owner. After much parleying, I found that the group of buildings was built about 200 years ago. It took fifteen minutes for me to get this information, so I decided to discontinue the argument until I have progressed a little in the French language.

The other day one of our saddlers was working around some horses that had just arrived and the following monologue took place: The saddler, a tall, rangy fellow, was working between two of the horses and decided that one must move over to make more room. The saddler started talking to one of the horses in good old army language, if you know what that is.

"You old blankety-blank, get over!" No move on the part of Mr. Horse.

"You —— —— —— ——, move over!" No move.

The saddler stood for a minute scratching his head and then yelled, "What in hell's the matter with you, don't you 'compre' English?" He then yelled, "Allez." (I think that it is the way it is spelled; anyway, it is French for move, or get over.) Well, say, you should have seen that old pony move. Grinning from ear to ear the saddler turned to a bunch of fellows standing near and said, "Hey, boys, this old son-of-a-sea-cook talks French."

When we moved into this billet, which is located in, out and around a small town, we noticed the following sign over a store: "English spoke, American understood."

You will be surprised to learn that I am still practicing architecture over here. You see, we have just built a barn. Don't laugh, for it's some structure. It is 200 feet long and 18 feet wide. It may not be an architectural masterpiece, but for efficiency it is a wonder. I have not yet decided whether it is French Renaissance, Classic or Chinese Gothic, but I have an idea that it is in the same class as a little chapel that I had the good fortune of visiting. This little chapel has wonderfully carved Gothic "oak panels" about five feet high all around. At one end is an altar that is decidedly classic, while the wall treatment above the panels and the ceiling are Rococco. It is some mixture and the remarkable thing about it is that each style is well executed. I have made measured drawings of the "oak panels." To get back to the barn, would say that the construction is frame. There is not a single two by twice used in the entire structure; in fact, the only dimensioned lumber used came from the "Armstrong Mill and Lumber Co." and their entire equipment consists of two American axes and two French broad axes. These French axes are some instruments. I have an idea that the ones just mentioned might possibly have been used by some of "ye olden knights." All of the lumber used was cut in the wood near here under our supervision. We marked our trees. It is all oak and there was no argument about the grading. It is one of the few jobs that I have specified in oak and finished without an argument as to the grade. This is one way for an architect to get what he wants in the way of lumber. For our columns we picked saplings about six inches in diameter and only ones with a crotch, which we used for supporting the ridge and plates. The whole affair is built of saplings. So that the contractor would not skin the job, we placed all the workmen under

federal control. This is a good idea and ought to be adopted in the States, as it cuts out all "union" troubles. Our men don't dare strike. If they do, it's the "hoos gow" for about six months. Just to be sure and make a good job, we only used four nails and two screws. These we extracted from old boxes that our canned "goldfish" comes in. Goldfish is one of our staples and in the English language is commonly known as salmon. You no doubt wonder how such a structure could be built with four nails and two screws. It's easy. The rest of the building is fastened together with wooden pins. I am at work now on an estimate of the number of miles of holes placed end to end that was necessary and will give you the data as soon as complete. The only tools used in this construction were two axes, "American," two alleged axes, "French," one bucksaw, "French," one American saw and one brace and bit. The specifications for finishing are not yet complete, as I cannot make up my mind whether "Bass-Heuter paint in colors selected" or a natural finish would be more appropriate.

I have made some sketches of some interesting bits that I have run across and hope to be able to make more if some sonofahun don't bump me off. This you will think a rather peculiar letter coming from a soldier and not being chuck full of war news. But you know as much about this little war as I do. There is so much written about life and experiences over here that, no matter what I might write, you probably would have read the same stuff before. We have the Huns licked now and are just getting ready to put on the finishing touches. Sincerely, Pvt. E. N. Curtis,

Hdq. Troop, 6th Depot Div., American E. F., France.

Censored: Jas. Gunn, Capt. Cav.

* * *

Portland's Most Notable Examples of Architecture

IN the March number of The Architect and Engineer will be published a jury's selection of the best examples of architecture in the city of Portland, the judges having been named at the request of this magazine by the Oregon Chapter, American Institute of Architects. Prizes aggregating $165 are offered by the Oregon Chapter, the General Contractors' Association, the Portland Housing Company and individual mercantile houses. The public at large is asked to name the ten most notable examples of architecture in Portland, the three most notable examples of landscape architecture, the two most notable examples of public sculpture and the five most notable examples of small house architecture within ten miles of the Portland City Hall. There will be one selection of each of the following classes of buildings:

One of residences.

One of public buildings, either state, county, city, schools or libraries.

One of commercial buildings, either office, bank, warehouse or industrial.

One of semi-public buildings, either hotels, club houses or apartment houses.

One of churches and religious buildings.

The remaining five selections will be of any class chosen for their quality of architecture.

Points of architecture to be considered are usefulness, arrangement, relation of exterior to interior design, beauty, harmony of detail, setting and purpose, color and appropriateness.

Anyone may enter this contest except architects, landscape architects, sculptors and teachers of art or members of their families.

The final jury of award will consist of three architects from other States, the curator of the Portland Art Museum and the professor of philosophy of the University of Oregon. The contest will close February 1 and the prizes will be awarded to persons submitting lists of the most notable examples of architecture mentioned above and nearest identically with the final judgment of the jury. A full report of the judges, with one or more pictures of each building in the winning list, will be published in the March number of this magazine.

It is proposed to hold similar contests in other Coast cities later in the year.

Relation Between Contractor and Engineer*

WHERE do we start when we begin to think about construction in the modern sense? Let's go back to when I was a boy. When I was a youngster I went to the office of a city surveyor. The city surveyor was then the man who supervised all contracts that the city of New York had anything to do with, with the exception of the Croton Aqueduct and one or two other things, but the city of New York, when I was a student in Edward Boyle's office, didn't have twenty-five engineers working for it.

The surveyor laid out the work. He used to call himself an engineer, if he had any gall and was not careful of the extent to which he was to be believed. But there were no engineers, speaking broadly, at that time outside of railway engineers; there were no municipal engineers to amount to a hill of beans. The fellows that handled the sewerage were sort of cheap plumbers and everything went along according to what a man could do. But they weren't engineers. The engineers then were confined entirely to my class, we will say, of city surveyors who supervised the work to the extent that they cross-sectioned where the street was to be and saw that they didn't fill in too much sawdust and empty barrels. Then when the work was done he made a final estimate and until that final estimate was made out nobody could get any money outside of the monthly payments.

The growth of things, the necessity for having better engineers, for having larger contractors, for having a different sort of construction, for having a building lot that comprised something beyond the building that was 25 feet front and 100 feet deep and five stories high (which everybody who knows anything about New York building laws knows was the building law of New York up until about 1892 or 1893), all this great concentration in cities, this great growth of wealth, this great independence of depending upon somebody abroad to furnish you with plans, evolved the modern engineer and the modern contractor.

The modern contractor is the man who, even in front of the modern engineer, would be entitled to membership in the American Society of Civil Engineers, because that says in order to be an associate of the American Society you must be able to make plans and build work and that you have had at least one year's experience in independent charge of work; to be a full member, which at the present time is restricted to people over thirty years of age, you must have had at least five years' experience in independent charge of work.

Now where is there a contractor who belongs to what we call the educated class who can't fill that bill? So when I talk about the relations between engineers and contractors, I don't want it to be understood that the engineer I mean is the man that makes the plans, and the contractor I mean is the man the engineer tells how to carry out the work, because that is what they did in the very beginning when it was easy. I am going to talk about the engineer and the contractor in the sense of the two parties to the contract.

There is first the owner and his representative, the engineer; and the engineer is to tell the contractor everything that the specifications say and everything that the plans mean, and if there is anything missing he can tell him a great deal more than anybody else can tell him that they mean.

That is where we get down to what I am talking about now as the relation between the engineer and the contractor. The thing that appeals to many

* From an address delivered by Mr. J. F. O'Rourke of New York City at the Associated General Contractors' meeting, Chicago.

engineers that started a good many years ago, was the fact that in making their plans they had a great deal more trouble in having them carried out than if they did the work themselves.

There were others who were not engineers, but were fine men—men with a large business who were put up against the higher development of construction that they had never any experience of, because there was no experience in it. They associated engineers with themselves to enable them to carry out their work. Those engineers I am going to call the contractors' engineers. That is, the engineer whom the contractor employs and without whom he could not do his work, ordinarily, is the contractor's engineer. The engineer who became a contractor, I am going to call a contracting engineer.

The owner's engineer is the one who makes the original plans.

There are other branches of engineers who have gotten to the point that they have an office. They have hired an office and call themselves consulting engineers, and many of them, of course, are among the most eminent men in the world.

In all these cases there has grown up a feeling that if a man is an engineer and is not making the original plans (however shadowy they may be as to the final execution of them), unless he belongs to that party of the first part, he is not, strictly speaking, an engineer.

Now, as to the party of the first part—engineers. It is safe also to say that in one case they are so underpaid that I don't know any class of professional men who are so much the victims of the employers as the straight engineers in America. The other one is the fellow who comes in where there are four dimensions. A lot of people are greatly troubled to know where the fourth dimension is. Unless they are very poor indeed, they've got it in their pocket.

But the thing we've got to do is to broaden ourselves, we've got to have contracts in which there will be something more than the statement that the engineer is the sole judge without providing any standard by which he can be judged as to his judging. We've got to make the contractors free in the sense that when they undertake to do anything and feel honestly that they are going to do it and that they are going to do it in the best and most efficient way, that they will be able to do that without having some poor creature that don't know anything at all about the work starting in to tell them how they shall do it wrong.

The only way this can be done is to make ourselves felt as a body of contractors, a body of contractors who (as my first definition states) are really a body of engineers. They are called contractors because they draw the thing together, not because they draw them. Note the difference. And we've got to have it so that whether a man is on one side or the other, it has got to be fully understood that there is a particular side that he is on and that they are all on, and that he is efficient, economical, rapid performance of the work. This is more to the owner than it is to the engineers of either side and it is more to the people in general than it is to the owner.

That is what we must work for and there ought to be some action taken, not necessarily at the convention, but by the officers of the convention shortly, which will take the engineers who are their engineers and among whom they are themselves possible engineers, and put them on an equality with every other engineer so that all may work together for the common good and for the best results.

Suggestions for Treatment of War Memorials

THE following suggestions for the treatment of war memorials are offered to local committees and architects by the American Federation of Arts, Washington, D. C., of which Mr. Robert W. de Forest is president. The suggestions, it is believed, will prove of considerable benefit to those who are considering the erection of war memorials:

(1) Consider the amount of money probably available. Conclusion on this point must necessarily precede any determination as to the form of memorial, and is equally important whether that form be some structure, architectural or sculptural, painting or work of landscape art.

(2) Consider tentatively the form which the memorial should preferably take, whether architectural or sculptural, a painting or some kind of landscape art.

(3) Also the question of site. This question is of vital importance. In large towns the memorial, if monumental, should not be so placed as to obstruct traffic and at the same time should be in a position sufficiently conspicuous to be worthy of its object. Existent buildings and other surroundings should be considered in deciding location. So should also the permanence of such buildings and surroundings. This is quite as important in the case of a small village as in a large town or city.

(4) Likewise in connection with any structure the question of material, whether stone, marble or bronze. Local stone has advantages, both economically and sentimentally.

(5) The approaches to any memorial and the points of view from which it is seen are quite as important as its immediate surroundings.

(6) The cost of laying out the site, when necessary, should be included in the scheme. The effect of a memorial is often entirely lost by want of a careful laying out of the site.

(7) Where memorials are proposed for the interior of buildings, whether in sculpture, architecture, stained glass, mural paintings or wall tablets, careful regard should be paid to the scale, and character of the architecture of the building, and to any adjacent monuments.

(8) The lettering of all inscriptions should be carefully studied and should be legible. A bold Roman type, or the Italian lettering of the sixteenth century based on it, is the type most suitable.

(9) In all memorials simplicity, scale and proportion should be aimed at rather than profusion of detail or excessive costliness of material. It is the artistic, imaginative and intellectual quality of the work that gives it its final value.

(10) Before the adoption of tentative plans, and preferably before any plans are made, secure expert advice. This can usually be best obtained by calling in a competent artist, be he an architect, a sculptor, a painter or a landscape architect. If there is to be a competition, careful specifications setting forth the terms of the competition should precede it. It should be remembered that the ablest artists are not usually willing to enter competitions except for structures of the most important kind.

The American Federation of Arts has determined to make war memorials one of the chief subjects of its annual convention, which is to be held at the Metropolitan Museum of Art in New York in the month of May, 1919. It expects to hold at the same time an exhibition of existing war memorials which have been erected in the past in Europe and America and which will be suggestive not only for cities but equally for country villages. Meanwhile a special advisory committee of experts whose services can be placed at the call of those throughout the United States who are considering the erection of war memorials is to be appointed.

Pending the announcement of the personnel of this special advisory committee, requests for suggestions and further advice may be forwarded to the Secretary, the American Federation of Arts, 1741 New York avenue, Washington, D. C.

Apartment House Construction*

By BENJAMIN H. MARSHALL, Architect, Chicago

THE plan for a high-class apartment building must contain all the good features of the well-designed house together with the numerous advantages made possible by apartment conditions. The majority of the tenants come from their own homes and also live in a house in the country a part of the year, so it is essential to give them all they are accustomed to, plus every possible convenience resulting from community life.

All large apartments consist of three distinct and separate parts, which parts may be called for convenience: public, private and service.

The living, or front part, contains the reception hall, the living room, the dining room, the breakfast or sun room, and the library. These rooms, with the exception of the library, should open into each other so as to make as good an arrangement for entertaining purposes as for general living. A small but important room which is rarely found except in the very best of private homes is the dressing or coat room for the use of guests. This room, in an apartment, must open from the reception hall as near the entrance door as possible. Too often guests arrive when it is awkward to take them into the private part of the apartment.

The private or chamber part of the plan should have a large rectangular hall, off of which open all of the bedrooms. This hall, which connects directly with the reception room, should be so designed and so arranged that it can be used as an informal sitting room. Each bed chamber must be provided with a large clothes closet and connect directly with its own bath. This bath must have good light and should be large enough to contain a dressing table in addition to the regular fixtures. In connection with one or two of the master chambers a large and light dressing room should be provided, fully equipped with cases and drawers to meet every demand of the tenant.

The sewing and linen room and a large storage closet should be located between this part of the apartment and the service quarters, so that ladies of the apartment can reach it without passing the servants' rooms and the servants reach it without coming into the private part.

The service, or rear part of the house, must connect directly with the reception hall, dining room and chamber hall. The number of servants' rooms should equal in number the master chambers. We have come to this conclusion after years of close contact with our tenants. The worst feature in most apartments, in regard to this part of the house, is that the kitchen —the most important workroom in the house—is also the most traveled passage. This should not be; the servants' dining room and butler's pantry must be so arranged that they can be reached without going through the kitchen. The architect, in designing the service end of the apartment, must always study with great care the most economical arrangement of the elements: where to place the refrigerator, the vault, the storage closets, the stove, the sink and the work table and what to do to make the service operate smoothly and with the fewest steps possible.

There are a number of details pertaining to the construction which need to be seriously considered. The question of deadening sound is a difficult one. In all the apartments we know of, sound will travel by means of the partitions, floors and columns from one apartment to the next. Our firm has made several experiments and we now have a scheme whereby we lower the ceilings of the rooms and rest them on the partitions. These partitions

*Extracts from paper read at convention of National Association of Building Owners and Managers.

support this false ceiling and do not connect with the floor above, so there is absolutely no direct connection with the next apartment and consequently the sound vibrations cannot travel out of the apartment. The elevator is the cause of objectionable noise and a bedchamber must never be placed next to the elevator shaft. If it is, there will be serious complaints as long as the building stands.

We believe the installation of the plumbing to be one of the most important of the minor things because if it is not done just the right way at first, it will do everything in its power to increase the operating expense. Plumbing repairs can very easily run into big figures. We arrange the fixtures in the bathrooms so that they rest against the wall of a pipe shaft. Then repairs to a pipe or the changing of a fixture can be done at any time without taking up the floor, or breaking into the wall, which work in a tile bathroom means a great deal of unnecessary expense. No steam pipes or supply pipes or pipes of any kind should be buried in the floors or walls. Trouble always occurs at the places most difficult to reach. Never place any pipe, radiator, fixture, or mechanical device where it is not easily accessible.

The size and location of the coal bin too often is neglected. The bin should be large enough for one-half year's supply and arranged so that the coal wagons can drive over the bin and dump the coal directly into the bin through manholes properly spaced to avoid any necessity for trimming. The ideal location for the boiler is in a sub-basement, so arranged that the coal will feed into the grates and save the labor of carrying.

* * *

Much Building this Year in China

IN December four annual subscriptions were received for The Architect and Engineer from architects in China. It would seem from this and other outward indications that China is planning to do some building on a very large scale this year. According to Mr. George E. Anderson, U. S. Consul-General at Hongkong, the colony of Hongkong proposes to disburse in 1919 more money on public works of various sorts than it ever has expended in any one year heretofore. The expenditures have particularly to do with the housing of the colony's population and the construction of new roads. In introducing the public works estimates to the legislative council on October 3, the Governor of the colony said:

"Under Public Works Extraordinary the total expenditure proposed is over two and a half million dollars, which largely exceeds any sum hitherto devoted in one year to public works in the history of the colony, but half of this sum is absorbed by works already in progress or to be begun this year. The time may not be propitious for embarking on large schemes, but the Government has no option in the matter. The growth of the population has more than kept pace with the building activity of the last six years, and it is essential that both in Victoria and Kowloon new areas should be made accessible by main roads for every class of domestic building. Large, however, as the sum provided is, it represents a small percentage of the expenditure required to thoroughly develop this great port to meet the probable needs of the next few years.

"Both the construction of houses and the construction of roads have been rapidly pushed during the past year and the attention of the Government has been directed to the matter of housing for several years. In spite of this fact the housing situation in Hongkong has come to be very acute, and not only have rents advanced by leaps and bounds but

for some classes of people houses are not to be had at any price. The Government's scheme for next year includes the construction of a block of twelve houses for the use of officers and employees; quarters for the sanitary board staff of nearly 300 men; two sets of quarters for senior officers in the government; and quarters for various other minor staffs."

The programme of road-building includes not only a continuation of work on the motor-car roads around and across the island and to Castle Peak on the mainland, but also the construction of a new road from Magazine Gap road on the northeast side of the island about halfway up the mountain around the main line of hills and through the lowest gap (Wong-nei-chong) to the south side of the hills, opening up a magnificent stretch of residential sites. It also includes a second road on the same hill to open up other sites and a beginning of a complete system of roads in the "New Territory" on the mainland. The Government also has in hand a survey of a road for motor cars to the "Peak" or mountain district, the construction of which will be rapidly pushed.

All this road-building not only is of more than usual importance in that it is based on the idea of relieving the pressure for houses, but also is of importance in its bearing upon the use of motor cars in the colony. By nature, Hongkong is not favorable to the use of vehicles of any sort. In the past two years, however, the automobile business has developed at a remarkable rate, while the immediate future is even more promising. The policy of the Government in constructing these new roads is based very largely on the use of automobiles. The roads and motor cars, in fact, are changing the entire course of life in Hongkong.

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Nomenclature

RECENTLY some discussion has been taking place in the Times Literary Supplement on the corruption of English by using many wrong words. Much of it is due to the jargon of war. The case was cited of the use of the technical term "sector" for "section" of the war front; of course, sector means a part of a circle bounded by two radii.

Other technical words were mentioned as not expressing their true meaning: Locomotive, aeroplane, submarine, etc. "Locomotive" is really an adjective and was originally used as "locomotive engine" as distinguished from "stationary engine." Soon the adjective was applied to mean the engine itself. The proper form for the noun should be "locomotor."

The word "aeroplane" means an airplane and could etymologically be applied to the sails of a windmill or other planes in the air. The correct expression would be "flying planes."

The common use of the word "submarine" is bad. We should use "diving boat," "undersea boat" or "submersible boat."

Then we have the word "tank" used for objects very different from those commonly so-called. This arose from the War Office sending these armoured cars to the front in large cases labeled "tanks" to keep secrecy as long as possible. It is a pity that another word could not have been coined for their name.

Our technical nomenclature grows up in haphazard fashion, and we are afraid that no protests from language purists will avail. The press soon brings it into common usage. The English-speaking peoples are,

however, most illogical in developing their language, and we do hope that guidance will be given by the various technical societies for the adoption of concise, terse, and true-meaning words as the need for them is necessary. The origin of many of our technical words is unknown, as they have come into use gradually. Some of them are dialect words and others have arisen from the rough terminology of the workmen.

We remember one example of the latter. In some very wet ground a double row of runners was driven and between the boards was packed straw and litter in order to filter the water coming through the boards and so to prevent sand, etc., from being pumped with the water, thereby causing settlement. As far as one could gather, this filtering material was called "hermerafulous" by the men. The meaning of it was, for long, a puzzle until, upon an old inspector being asked, he replied: "Don't you see, sir, it means half-and-half." Then one understood that it was a corruption by the workmen of the word "hermaphrodite." We expect that many technical words have come to the fore in this manner.—Architect, Builder and Engineer, Cape Town.

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Building Forecast in the East

A FORECAST of the probable volume of building construction in the East, similar to that in California published in the December issue of this magazine, has been compiled by the F. W. Dodge Company of New York. The summary shows a total of over $450,000,000 of projected construction from the offices of about 400 architects and engineers. This is distributed as follows:

NEW YORK CITY.—Total proposed construction (from 91 offices), $70,575,000, exclusive of $9,000,000 for city schools, divided approximately as follows: Industrial and office buildings, $22,420,000; apartment houses, hotels and residences, $11,065,000; institutional, church and municipal buildings, $23,305,000; still unclassified, but divided among foregoing classes, $13,785,000.

BUFFALO, N. Y.—Total proposed construction (from 14 offices), $3,693,000, divided approximately as follows: Industrial and office buildings, $970,000; apartment houses, hotels and residences, $1,648,000; institutional, church and municipal buildings, $1,075,000.

NEWARK, N. J.—Total proposed construction (from 8 offices), $4,255,000, divided approximately as follows: Industrial and office buildings, $3,080,000; apartment houses, hotels and residences, $655,000; institutional, church and municipal buildings, $520,000.

BOSTON, MASS.—Total proposed construction (from 12 offices), $20,816,000, divided approximately as follows: Industrial and office buildings, $175,000; apartment houses, hotels and residences, $395,000; institutional, church and municipal buildings, $3,860,000; still unclassified, but divided among foregoing classes, $15,386,000.

WORCESTER, MASS.—Total proposed construction (from 7 offices), $1,820,000, divided approximately as follows: Industrial and office buildings, $805,000; apartment houses, hotels and residences, $210,000; institutional, church and municipal buildings, $905,000.

EASTERN MASSACHUSETTS CITIES (Outside Boston).—Total proposed construction (from 17 offices), $3,885,000. Divided approximately as follows: Industrial and office buildings, $770,000; apartment houses, hotels and residences, $1,515,000; institutional, church and municipal buildings, $1,570,000.

MAINE AND NEW HAMPSHIRE.—Total proposed construction (from 8 offices), $1,350,000. Divided approximately as follows: Industrial and office buildings, $175,000; apartment houses, hotels and residences, $375,000; institutional, church and municipal buildings, $850,000.

CONNECTICUT, MASSACHUSETTS.—Total proposed construction (from 9 offices), $6,089,000. Divided approximately as follows: Industrial and office buildings, $1,845,000; apartment houses, hotels and residences, $782,000; institutional, church and municipal buildings, $3,462,000.

TRENTON AND CAMDEN, N. J.—Total proposed construction (from 11 offices), $3,955,000. Divided approximately as follows: Industrial and office buildings, $675,000; apartment houses, hotels and residences, $145,000; institutional, church and municipal buildings, $3,135,000.

PHILADELPHIA, PENN.—Total proposed construction (from 42 offices), $43,740,000. Divided approximately as follows: Industrial and office buildings, $14,968,000; apartment houses, hotels and residences, $13,724,000; institutional, church and municipal buildings, $15,032,000.

EASTERN PENNSYLVANIA CITIES.—Total proposed construction (from 15 offices, outside Philadelphia), $4,250,000. Divided approximately as follows: Industrial and office buildings, $1,195,000; apartment houses, hotels and residences, $400,000; institutional, church and municipal buildings, $2,620,000.

BALTIMORE, MD.—Proposed construction (from 18 offices), $4,160,000, divided approximately as follows: Industrial and office buildings, $615,000; apartment houses, hotels and residences, $1,105,000; institutional, church and municipal buildings, $2,480,000.

PITTSBURGH, PENN.—Total proposed construction (from 42 offices), $15,575,000, divided approximately as follows: Industrial and office buildings, $3,675,000; apartment houses, hotels and residences, $5,860,000; institutional, church and municipal buildings, $5,875,000.

CLEVELAND, OHIO.—Total proposed construction (from 19 offices), $34,450,000, divided approximately as follows: Industrial and office buildings, $7,500,000; apartment houses, hotels and residence, $2,250,000; institutional, church and municipal buildings, $24,700,000.

COLUMBUS, OHIO.—Total proposed construction (from 2 offices), $3,535,000, principally in industrial and office buildings; apartment houses, hotels and residences, $250,000; institutional, church and municipal buildings, $760,000.

CINCINNATI, OHIO.—Total proposed construction (from 6 offices), $2,005,000, divided approximately as follows: Industrial and office buildings, $525,000; apartment houses, hotels and residences, $100,000; institutional, church and municipal buildings, $1,380,000.

CHICAGO, ILL.—Total proposed construction (from 42 offices), $144,047,000, divided approximately as follows: Industrial and office buildings, $128,033,000; apartment houses, hotels and residences, $1,929,000; institutional, church and municipal buildings, $14,085,000.

DETROIT, MICH.—Estimate 1,064 projects, total valuation, $46,100,000, ready to mature in Eastern Michigan within year if ban is lifted. Small private plan projects will probably add 1,000, with valuation $4,000,000, within year. Total over $50,000,000.

ST. LOUIS, MO.—Following work held up account of war: Four factories, $1,800,000; theatre, $160,000; two hotels, $235,000; three stores, $65,000; three colleges, $130,000; two boiler houses, $65,000; one church, $30,000; three lofts, $109,000; five schools, $1,040,000; one convent, $200,000; one garage, $60,000; one club, $35,000; eight apartments, $540,000; sixteen residences, $404,000; three flats, $25,000. Total, fifty-five projects, to cost $4,898,000.

KANSAS CITY, MO.—Local architects have and are preparing plans for approximately fifty new buildings, cost aggregating $20,000,000; majority of projects awaits only the lifting of the Government ban on materials; hundreds of houses and homes will be added as soon as materials, men and transportation can be depended on.

MINNEAPOLIS, MINN.—Office and store building, $400,000; church, $20,000; office, warehouse, etc., $1,000,000; industrial enterprise, offices, etc., $1,000,000; about $10,000,000 of school work throughout Northwest will go ahead.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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Give the Architect Time to Think Out His Plans

That the public is taking an interest in the prospects for an early building revival was evident last month when the San Francisco papers reprinted in full The Architect and Engineer Building Forecast for 1919. That the publication of the articles helped to restore confidence, not only among members of the building industry but with owners and investors, was attested by the numerous inquiries which architects and realty dealers received directly following the printing of the Forecast. The San Francisco Bulletin made four reprints from this magazine in two different issues and the Call and Post published two columns of the Forecast under a spread heading worded:

"Thirty Million Estimated as Cost of New Buildings in San Francisco and Bay Cities for 1919."

If so much publicity at this time does nothing more, it should help to put the architect back on the map. Undoubtedly the articles have been instrumental in giving the public a keener appreciation of the architect's importance in the building up of our cities.

While there has been no noticeable resumption of large construction work since peace was declared, this fact is not surprising. It will probably be three or four months before we begin really to feel that building is getting into its stride again. There seems to be a tendency to wait for lower prices. If this is going to be made a continuous excuse there will likely be some disappointment in an early resumption of building. Prices are not going to fall materially for some time, if at all. Owners should make up their minds to this now. Furthermore, if they intend to build in the spring, regardless of prices and labor conditions, they should not wait till then before ordering their plans. Most of our architects right now have very little to do. This is unfortunate. They should be busy. They should be planning and de-

veloping the work that their clients expect to have started three months from now. The trouble with the average owner is that he imagines he can order his plans as he would order a suit of clothes—take the measurements today and have the work completed tomorrow or the day following.

Build Now and Build Well

Now that the frosts of war that drove the building industries into hibernation have been dispelled by the grateful warmth of the armistice, the dormant bear of investment Finance stirs in its slumbers, rubs its eyes and prepares to seek whom it may devour; but, dazed from its long inactivity, emaciated from its enforced fast, is cautious. It is like the architects, and the architects are like the twenty cats camped around one tiny knot-hole from which one timid little mouse exposes one bristly little whisker. So, queries Mr. Investment Finance: Can we build now? What about capital issues? What about priorities? What about the next Liberty Loan? What about the high cost of labor? What about the high price of material? Still the spring thaw that releases the stored up snows of winter, with its resultant freshets, will wash away all obstacles to progress.

Shall we wisely impound and direct this flood or shall we permit its uncontrollable flow to wreak destruction equal to or greater than the devastations of war? Therefore, Mr. Capital Investment, Mr. Labor and Mr. Material Man, hark unto my voice; sit thou at my feet and learn wisdom: Labor will never be cheaper. My father, after the Civil War, was glad to cut, haul and pile good oak cord wood for one dollar a cord. I guess we are glad to pay $20 today.

Still we can buy a better elevator for less money today than we could ten years ago. We can buy a better automobile for less money today than we could five years ago.

We can build a better building for less money today than we could twenty years ago.

Twenty years ago more steel was put into the foundation of the Claus Spreckels building in the form of grillage than was recently put into the entire Hobart building from base to roof. We didn't know better then. We know better now. We can do better things now for less money than we could then. Mr. James Phelan, it is said, traded a band of mules for the lot upon which the Phelan building stands today. What are we going to trade for the opportunities of this moment?

We are going to build and build and build, wages and prices to the contrary notwithstanding — the sleeping giant stirs, the sleeping giant wakens; look out when he sheds the superfluous hair from his shaggy fur; stand aside, O timid ones, lest thou be devoured.

The late Mr. D. H. Burnham used quizzically to relate that Mr. H. H. Richardson held that an architect's first duty was to get a job. Then he would solemnly observe: "But Henry was wrong; an architect's first duty is to DO the job."

"But do it well," he would always add.

Willis Polk.

The Building Outlook for 1919

Indications point to the greatest building revival during 1919 which this country has ever experienced. This is true largely because certain classes of structures must be erected almost at once to provide for actual demand. First of all, in the larger cities, apartment houses and dwellings will lead the way, but closely following will be office buildings, lofts and industrial structures. Then there will be a tremendous amount of bank building. All over the country our financial institutions have been carrying on their work in their old homes, in crowded, inadequate quarters, waiting for a favorable time to erect new buildings or modernize their quarters by remodelling. Banks

have never been more prosperous, and the bankers seem to feel that not only will they be meeting an economic need by building now, but that their action in this regard will set a precedent in their communities and encourage other owners to build. It is the specified wish of the Government that, in order to provide employment, construction work be put under way at the earliest possible moment.

In the industrial as well as in the domestic and commercial fields, building should see a large and healthy increase in volume. New factories must be built; plant extensions are an economic necessity, war plants, instead of being scrapped or abandoned, will, in many instances, be altered for peace work.

Housing for employees, which received such an impetus during the past two years, will be carried out on a vaster scale than we had ever thought possible. Employers have recognized the actual money value return of providing good housing accommodations for their employees. It is fatuous to believe that the employers have not profited by the lessons of the war. They have learned that contented workmen are the best possible asset, that

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514 Worcester Building

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

To Build Milk Plant

A new industry has been launched in Sacramento with the letting of a contract to the Clinton Construction Company of San Francisco for the new plant of the Northern California Milk Producers' Association. The contract calls for the completion of the plant within ninety days. The main building will be four stories in height, built of reinforced concrete, and will be of the modern industrial type. There will be a power house adjoining and a 30,000-gallon fuel oil tank. The building will have a complete cold storage equipment. Offices of the association will be on the second floor. The plans for the building were prepared by Mr. E. C. Hemmings, architect, of Sacramento. The cost of the plant, when completed and equipped, will be $125,000.

Oregon Chapter Is Wide Awake

Oregon Chapter, American Institute of Architects, has commenced the New Year most aggressively. The Portland architects are, indeed, wide awake. Besides lending its moral and financial assistance to the contest now being held for naming the most notable examples of Portland architecture, the Chapter is conducting an exhibition of housing designs which includes some 35 examples of workers' homes, designed by various members of the Chapter, together with photographs and drawings of executed work. The exhibit is proving not only very interesting but instructive to the public. Later on the Chapter will hold an exhibit of all kinds of building material, this to be followed by a realtor's campaign for owning your home.

Architects for Armory Competition

Four architects have been selected by the General Staff of the Oregon National Guard to prepare competitive designs for a one-company armory building to be erected in Marshfield, the estimated cost being $40,000. The architects chosen are Messrs. Claussen & Claussen, Portland; Mr. W. G. Chandler, Marshfield; Mr. John Hunsicker, Eugene, and Mr. Geo. M. Post, Salem.

Architects Hold Election

The Washington State Society of Architects held its annual meeting at Seattle on Tuesday, December 3. Mr. A. Warren Gould was re-elected president; Mr. Harry H. James was re-elected vice-president; Mr. Frank H. Fowler, secretary-treasurer; and Messrs. Gould, James, Fowler, Julius A. Zittel and R. Hamilton Rowe were elected trustees. Mr. Gould was elected chairman of the legislative committee, Mr. Zittel chairman of the committee on finance, Mr. James chairman of the committee on organization, Mr. William J. Jones chairman of the committee on rules and Mr. H. Ryan chairman of the committee on competitions. Progress of a satisfactory nature was reported for the past year and the society is adhering strictly to the rule that architects shall be citizens of the United States before being eligible for membership.

Concrete Home for Nurses

Mr. A. Lacey Worswick is the architect of an eight-story reinforced concrete building for the nurses of the Affiliated Colleges at Fourth and Parnassus avenues, San Francisco. The building will be erected by Engineers Kahn & Macdonald, who are also the owners and have leased the structure to the University of California for a term of years. The plans are subject to the approval of Mr. W. C. Hays, architect for the university. The building will cost $150,000.

Competition for Bank Building

Mr. Sylvain Schnaittacher, president of San Francisco Chapter, A. I. A., has been appointed architectural advisor by the Bank of Italy, which intends to hold a competition shortly for a new bank building. Mr. Schnaittacher is able to be about again after an attack of the influenza.

Honolulu Warehouse

Mr. H. L. Kerr, architect in Honolulu, has prepared plans for an $80,000 reinforced concrete warehouse to be built at Waipahu, T. H., for the Cahn Sugar Company.

Is Willis Polk An Architect?

Is Mr. Willis Polk really and legally an architect?

This problem is liable to become an acute bone of contention between Willis and the State authorities at an early date.

There is a State law which compels every practicing architect to pay a license of $15 a year, or describe himself as an unlicensed architect.

When the Tax Collector went to Willis Polk's office for his license money, Mr. Polk received him and said:

"Why do you tax me? All the architects here say I am not an architect. What is my word against theirs? Let the matter go!"

The Tax Collector, peeved and astonished, picked up one of the Polk letterheads.

"What do you call yourself here?" he snapped, adjusting his glasses.

"Willis Polk & Co., Builders," replied Mr. Polk. "There's no architect about that!"

The Collector departed without collecting the $15 fee. He says that he will yet prove Mr. Polk is an architect, or eat the license.—San Francisco Chronicle.

San Francisco Society of Engineers.

The San Francisco Association of the American Society of Civil Engineers has elected the following officers for the current year: President, Mr. E. J. Schneider of the American Bridge Company; vice-president, Mr. M. M. O'Shaughnessy, City Engineer of San Francisco; secretary and treasurer, Mr. Nathan A. Bowers.

The society's headquarters are at 57 Post street, San Francisco.

Annual Meeting of Engineers' Club

The annual election of the Engineers' Club, Seattle, was held on January 10, when the following officers were elected: President, Mr. H. E. Horrocks; vice-president, Mr. L. M. Grant; secretary, Mr. E. J. Bartells; treasurer, Mr. Amos Slater; executive board, Messrs. J. F. Pinson, Stuart Mannell, R. S. Drury.

State Fish Hatchery

Construction work on a $20,000 state fish hatchery at Happy Isles, Yosemite Valley, will begin in June. Mr. Stephen P. Mather, director of national parks, State Architect George B. McDougall, and officials of the state fish and game commission recently visited the valley to make selection of the site.

Personal

Mr. Leo J. Devlin has been appointed a trustee of San Francisco Chapter, A. I. A., to fill the unexpired term of Mr. William C. Hays, who has been elected to the vice-presidency.

Mr. Percy A. Cupper, Assistant State Engineer of Oregon, has been appointed engineer to succeed Mr. John H. Lewis, resigned. The latter goes with the Warm Springs Irrigation District at Vale, Oregon, as engineer-manager.

Mr. Martin A. Sheldon, formerly Martin A. Schmidlin, announces the reopening of offices for the practice of architecture in the French Bank building, 110 Sutter street, San Francisco.

Mr. H. J. Brunnier, C. E., whose offices are in the Sharon building, San Francisco, has resigned his position as assistant to the chief engineer of the concrete boat division of the Emergency Fleet Corporation, and has returned home to take active charge of a steadily increasing practice.

Designs Motor-Park

Professor J. W. Gregg, head of the Division of Landscape Gardening and President of the Berkeley Park Commission, prepared plans for the development of a modern Motor-Park-Playground for the city of Marysville, recently completed, which present so many strictly original utilitarian and aesthetic features of such great value that they are being favorably commented upon by all the leading automobile magazines of the country. So thoroughly favorable has been their review that Mr. A. S. Seilet, manager of the American Automobile Association of Washington, D. C., has recently requested permission to make use of the plans in all details in the construction of a similar park at the Nation's capital.

Marine Hospital

At a cost of $238,500 the San Francisco Marine Hospital, maintained by the United States Public Health Service for merchant marine sailors and civilian Government employees, is erecting four frame temporary ward buildings and two small permanent structures for attendants and surgeons' quarters. Within a year or two it is expected these buildings will be replaced with permanent structures costing $750,000.

Palace Hotel Addition

The proposition to add eight stories to the rear portion of the Palace Hotel, San Francisco, is again being discussed, but it is doubtful if the improvements are made this year. Mr. Geo. W. Kelham will make the plans when the addition is built.

San Jose Building Outlook

San Jose architects expect a busy year. Mr. Warren Skillings has prepared preliminary drawings for a five-story reinforced concrete department store building for Mr. Alex. Hart, which will cover ground area 100x100 at Market and Santa Clara streets. Mr. Chas. McKenzie has made plans for the new home of the Beach Nut interests and he has also made preliminary drawings for two large commercial garages. Messrs. Wolf & Higgins expect considerable store' alteration work and residences and Mr. William Binder will erect several new business buildings and apartment houses. Bush & Wallace, construction engineers, have designed and will build a two-story concrete store and office building adjoining the Prune Growers' building. One of the stores will be occupied by the San Jose Evening News and another has been leased by the Hillis-Murgotten Printing Company.

High School Plans Rejected

The Trustees of the Madera Union High School District have rejected the plans and specifications of Messrs. Allison & Allison, Los Angeles, for the proposed new high school building.

The plans, which were ordered and accepted by the previous board of trustees, were abandoned by the present trustees because the scheme of building was designed for the Bear Creek site, which has since been abandoned by the trustees because of the strong public sentiment against it. The plans, the trustees state, would not suit any other possible site which may be chosen.

Oakland Apartments

Mr. Chester H. Miller, Call Post building, San Francisco, is completing plans for altering two three-story frame buildings and for the erection of a three-story brick building, the three structures to be made into one large apartment house of 30 three and four-room apartments. The site is Grand avenue and Webster street, Oakland, and Mr. Charles Gross, the owner, estimates the cost at $60,000.

Bakersfield Garage

Mr. Thomas B. Wiseman of Bakersfield has prepared plans for a one-story and basement brick garage, 82x122 ft., to be erected at Nineteenth and N streets for Mr. H. H. Schultz, who has leased the property to the Western Auto Stage Company. The building will contain a gasoline and oil service station, repair shop, offices and waiting room.

Yosemite Park Improvements

It is believed there will be quite a little permanent building in the Yosemite Valley this year. It is reported the Shafers have relinquished their interests in hotel properties there and that Mr. A. B. C. Dohrmann has added to his holdings. Mr. Edwin J. Symmes, the San Francisco architect, has designed most of the buildings erected in the park.

Y. M. C. A. Building for Pomona

Mr. Robert H. Orr, 1301 Van Nuys building, Los Angeles, is preparing plans for a Y. M. C. A. building at Pomona to cost $150,000 and dedicated to the memory of Pomona soldiers who died in France. Building will be four stories, 125x150 and will contain gymnasium, auditorium, cafeteria, etc.

Fresno to Spend $5,000,000 for Highways

Bonds are to be voted within the next sixty days for four hundred miles of new road work in Fresno county this year. Mr. Lloyd Aldrich, chief engineer of the Stanislaus Highway Department, has been appointed a deputy engineer by Surveyor Chris Jensen of Fresno, and he will be in charge of the work.

$20,000 Brick Garage

Mr. Paul F. De Martini, 2123 Powell street, San Francisco, has prepared plans for the construction of a one-story brick and concrete garage, 182.6 by 137.6, on the south side of Pacific street, 87 feet west of Grant avenue, by Canepa, Antonini and Company, 543 Columbus avenue. The cost is estimated at $20,000.

New Hospital at Seattle

Mr. J. R. Nevins, Hoge building, Seattle, has completed plans for a three-story brick hospital, 73x34, with a wing 34x34, to be erected at 16th avenue and John street, for Dr. J. W. Wilkins, Cobb building, Seattle. It will be known as St. Lukes Hospital.

Chico Architect Busy

Mr. Chester Cole of Chico is preparing plans for remodeling the undertaking parlors of Fetters & Williams at Chico. Mr. Cole is also preparing plans for remodeling the undertaking parlors of R. Bevan & Son, at Marysville, Yuba county.

Berkeley Building Permits

Building Inspector Robert Greigg of Berkeley, reports that the building permits for the year 1918 totalled $722,290, as against $1,233,650 in 1917.

Eastern Architect Moves to Pasadena

Mr. Peter B. Wight, F. A. I. A., architect, or as he rather crudely designates himself, "ex-architect," has removed from Chicago to Pasadena, California. Mr. Wight announces his change of residence by a card which, entitled "the house and the man," shows a picturesque and comfortable bungalow, in front of which Mr. Wight sits in apparent comfort "under his own vine and fig tree."

The fig tree pose in the picture might lead one to imagine that this was the realization of a wish, made in the most strenuous days of his activities—or when his best draftsman, Mr. John W. Root, left his employ to form a partnership with "Dan" Burnham:

"I wish I wuz a rock a settin' on a hill,
A doin' nuthin' all day long but jest a settin' still.
I wouldn't eat, I would'nt sleep, I wouldn't even wash,
But jest set still a thousand years an' rest myself, b'gosh."

Sacramento Municipal Work

The Sacramento City Commission has been asked to call a bond election April 30th to vote for $1,853,000 for municipal improvements, as follows:

Memorial hall	$ 350,000
Incinerator	143,000
Reinforced concrete wharf and warehouse	160,000
Filtration plant	1,200,000

Solano County Hospital

The proposed county hospital for Solano county at Suisun, construction of which was postponed on account of the war, will be built this year. Final plans by Mr. Edward Perry of Vallejo will be submitted to the Supervisors at their next meeting.

Addition to Insurance Building

Mr. J. R. Miller, Lick building, San Francisco, is preparing plans for a one-story class A addition to the Metropolitan Insurance building, Stockton, near Pine street, San Francisco.

Ranch Buildings

Mr. George McCrea, architect in the First National Bank building, Oakland, is preparing plans for a number of ranch buildings to be erected in the San Ramon Valley for Dr. S. J. Silva of Oakland.

Concrete Refinery

The Western Meat Company will build a five-story reinforced concrete refinery in South San Francisco. The cost is estimated at $125,000.

Memorial for San Francisco Heroes

The Mayor of San Francisco has named a finance committee to take charge of the collection of funds for a permanent memorial arch in the Civic Center to commemorate the sacrifices made by San Francisco soldiers during the war. It is desired to make this an artistic tribute to the soldiers and at the same time erect something that will permanently add to the beauty of the Civic Center.

In announcing the committee to the Board of Supervisors the Mayor said:

I have appointed a finance committee of the most representative men and women of this city to get sufficient funds to erect a memorial arch in the Civic Center in honor of our soldier heroes. We want $300,000 for the arch proper. We also want additional funds for a temporary "welcome home" arch. We also want funds for the erection of a fitting tablet in the City Hall which this board authorized some time ago.

I have had some drawings made by City Architect John Reid for a tablet of bronze and marble, and will ask the Supervisors to have them placed where they can be inspected.

The permanent arch we hope to make one of the beautiful additions to the city's bronze of art, and also a fitting tribute to the soldiers who have paid the price in the cause of liberty. People have come forward and promised subscriptions of $500 and $1,000 each, and I feel sure that, in the hands of the committee that has been appointed, the work will be successfully accomplished.

Passing of a Pioneer Builder

Mr. Alexander McBean, 87 years old and the son of a one-time famous contractor in Chicago, with whom he was associated in many large construction enterprises, died at his home in Los Gatos early in December. He succeeded to the business upon the death of the elder McBean, and operated in many big cities in the country. One of his notable projects was the construction of the sewer system for the city of Victoria, B. C., at a cost of a quarter million dollars. Later he operated the Oakland branch of the Gladding-McBean company, of which his brother, Peter McBean, is one of the owners.

Passing of Paul J. Pelz

The death of Mr. Paul J. Pelz of the former Washington firm of Smithmyer & Pelz, architects, occurred recently, at the age of 76. Mr. Pelz was the original designer of the exterior of the Congressional Library, a commission won through competition.

Second Unit to Museum

Plans are being prepared by Mr. Louis C. Mullgardt for the second unit and central tower of the new museum in Golden Gate park.

$500,000 for Road Work

Santa Clara county will spend $500,000 for new road work this year.

Building Outlook for 1919

[Continued from page 112.]

high labor turnover is wrong and expensive, and that proper housing is one of the greatest, if not the greatest, factor in reducing labor turnover and keeping employees happy on the job.

The immense amount of reconstruction work to be done in France and Belgium is going to affect building conditions in this country more than is generally realized. This is true particularly in regard to prices for materials. The excessive demand for certain materials for use abroad is most likely to keep prices in this country up to the present high level. Steel, so far, has been the only material which has shown any tendency to decline in price, but, with the great number and kinds of buildings needed, the matter of cost will probably not enter into calculations as much as under ordinary conditions. It should be remembered that since 1914 this country, except for a short period in 1916, has been underbuilt.

NOBLE F. HOGGSON.

Flu Attacks Many Architects

The second flare-up of the influenza confined a good many San Francisco and Oakland architects to their homes, including Messrs. Chas. P. Weeks, W. P. Day, W. G. Corlett, W. C. Hays and Sylvain Schnaittacher. It is gratifying to know, however, that all are now fully recovered.

A very sad case was the death of Mrs. Rowena Steilberg, wife of Mr. Walter T. Steilberg, chief draftsman for Miss Julia Morgan, who passed away in Berkeley on January 7.

$200,000 Addition to Plant

The Schmidt Lithograph Company, which planned to double the size of its San Francisco plant last year and then postponed construction until after the war, expects to proceed with the improvements just as soon as plans are finished. Mr. Frederick Whitton will design and put up the buildings, which will represent an outlay of $200,000 or more.

Engineers and Architects Elect

The Engineers and Architects Association of Southern California has re-elected the old board of officers as follows: President, Mr. H. Z. Osborne, Jr.; first vice-president, Mr. J. J. Backus; second vice-president, Mr. H. L. Smith; directors, Messrs. A. B. Benton, G. E. Bergstrom, A. H. Koebig and G. P. Robinson.

To Complete Museum

Plans are being prepared by Mr. Louis C. Mullgardt, architect, and Mr. H. J. Brunnier, engineer, for the second wing and central tower of the Golden Gate Park Museum. The construction will be reinforced concrete and hollow tile.

Irrigation System

Deputy County Surveyor J. E. Barieau reports that Wallace Hemphill of Roseville, Cal., has had plans prepared for an intensive irrigation system south and southwest of Lincoln, to take water by gravity out of Auburn Ravine, which is now being fed by the big canal of the Pacific Gas & Electric Company, which empties into the ravine a short distance below the Wise power house near Auburn. The main canal planned by Hemphill will have a capacity of 1500 miners' inches of water and it will have its intake a short distance above the bridge at Lincoln.

Use Abandoned Potteries

Mr. I. V. Chown, an Oakland metallurgist, claims to have discovered a process whereby iron ores of California may be handled by direct process. He says that his method requires no great capital to establish a plant as the ores can be reduced in kilns similar to those used in burning fire brick and pottery. This, Mr. Chown states, makes available to the iron industry several large pottery plants which are now either idle or running on a restricted fuel allowance. These plants, he alleges, could turn out enough iron to justify the establishment of steel plate mills in California.

Mercantile Building

Mr John C. Austin, architect in the Baker-Detwiler building, Los Angeles, has announced that actual work on the erection of the new five-story J. E. Carr building on the west side of Broadway, between Sixth and Seventh streets, has been deferred until May 1. Most of the sub-contracts on this building have been let and the greater portion of the materials to be used in the general construction work already contracted for. Bids on the general and sub-contracts not already provided for will be taken about April 1.

Will Complete Mr. Haber's Work

Mr. T. Ronneberg, designer and structural engineer, will supervise the completion of the unfinished work of Mr. Charles Haber, San Francisco architect, who died of pneumonia following an attack of Spanish influenza. Among the buildings for which plans had been finished by Mr. Haber is a gymnasium and social hall for the Wellsley M. E. Society to be erected on McCoppin avenue, San Francisco.

Memorial Hall for Sacramento

Sacramento will have a memorial hall for her soldier boys. A fund of $150,000 is being raised by the Chamber of Commerce in addition to $350,000 proposed to be raised by bond issue, and the city has promised to donate a site at Tenth and I streets.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

By ROBERT H. MOULTON, in Building Age

ONE of the most singular ideas ever involved in the moving of houses was recently put into practice in West Somerville, Mass., where a large three-story dwelling was cut in two and moved from an eminence ten feet above the street level and set up a mile distant from its former resting place. It was found impossible to move the house in its entirety. The cut was made squarely through the center, and as the house was built in a very symmetrical manner, each half was an exact counterpart of the other.

After bracing the house, first one section and then another was moved to the new location with jackscrews and rollers. On bringing the two reunited divorced portions together they dovetailed into such a perfect fit that it was impossible to discern the separating cut. As each of the sections was 35 by 20 feet at the base and almost 40 feet in height, they were liable to topple over during the process of moving. This was prevented by tearing down the chimneys and foundations and loading the first floor of each section to a considerable depth with brick. The brick acted as a ballast and the sections were moved without any damage to the structure.

A Substitute for Corrugated Iron

The British are now manufacturing a satisfactory substitute for corrugated iron and sheets. It is an asbestos-cement roofing material. The method of making it is as follows: After being finely ground and freed from extraneous matter, the asbestos, which acts as the reinforcing agent, is mixed with portland cement in the proportion of about 1 to 6, and made into a paste with water. This paste is then taken to a machine of the paper-making type, where, on a large revolving drum, it is formed into sheets or felts. After the sheets have been trimmed to size, they have the corrugations impressed on them. The important condition for this operation is to insure that the tops of the corrugations are as strong as the other parts of the sheets. Finally the sheets are subjected to a "seasoning" process. The corrugations are made to the 3-inch pitch, which is usual with corrugated iron sheeting, not to the 2½-inch foreign pitch, and they can therefore readily be used to repair roofs of corrugated iron. One of the chief advantages claimed is their durability and resistance to climatic conditions, especially to an acid-laden atmosphere, which rapidly destroys corrugated iron. The sheets are also fireproof and are poor conductors of heat.—Brass World, New York.

Young Woman Bosses Washington State County Road Contract

MISS VERONA M. MORGAN
ON THE JOB

MANY occupations, that before the war were considered suitable only for men, have been taken over by women. But County Engineer David H. White of Tacoma believes Pierce county is the first to have a young woman superintendent for a concrete highway contract. The Pacific Highway from Tacoma to Camp Lewis is the job, and Miss Verona M. Morgan, the 19-year-old daughter of Contractor T. M. Morgan of Everett, Wash., is the young woman. Miss Morgan acted as superintendent last year on Snohomish County Bond Issue Road No. 28, leading from Monroe to the King county line—a job six miles in length. She has handled this work most efficiently and this is one of the first contracts at the low prices prevailing then upon which a profit was made.

Miss Morgan is supervising all details of "hiring and firing" the labor, keeps the books, and is a real general manager. In addition to these duties, when the camp cook recently exercised the cook's prerogative and quit without notice, the young lady kept things going by doing the cooking for forty men for three days until a new chef could be secured.

Miss Morgan believes in saving labor by the use of an up-to-date concrete paving roller, and knows that concrete profits are realized only through close supervision of concrete details. Mr. Morgan has several concrete highway contracts under way and wishes that he had more daughters.

WIDENING CONCRETE HIGHWAY TO CAMP LEWIS, PIERCE COUNTY, WASHINGTON—MISS MORGAN IN FOREGROUND—COUNTY ENGINEER WHITE BLOCKING TRAFFIC ON PAVED HIGHWAY.

Photos by courtesy of the Pacific Builder and Engineer and the Portland Cement Association.

Industrial Accident Commission's Report

Governor William D. Stephens has the report of the Industrial Accident Commission of California for the fiscal year ending June 30, 1918. The outstanding feature of the report is that there were 31 fewer industrial deaths in California during 1917 than there were in 1916. In 1916 the deaths reported totaled 657, and in 1917 the total was 626. In view of the larger number of employees in 1917, and the impetus given to hazardous employment as a result of war activities, the reduction in California's industrial deaths is gratifying. The emphasis on accident prevention that the commission gives has received splendid support from employers and employees. It was anticipated that 1917's death roll would be higher because frequently inexperienced men were assigned to hazardous work, but this fear was happily dispelled when the reports were tabulated.

The total number of reported industrial injuries for 1917 was 109,988, divided as follows: Fatal injuries, 626; permanent injuries, 1942; temporary injuries, 107,420.

Total dependents to the number of 668 were left as the result of 284 fatalities; 170 partial dependents were left in 75 fatal cases, in 256 fatal cases there were no dependents, and in 11 fatal cases the degree of dependency was unknown. The average age of the wives left dependent was 36.8 years, and the children's average age was 7.5 years.

The commission awarded life pensions in 8 cases of serious and permanent injuries. There were 17,007 injuries that caused a time loss of 15 days or more. The remaining injuries came within the two weeks' waiting period.

How to Kill a Master Builders' Association

1. If you receive a notice of meeting, tear it up, and
2. Swear blind you never got the notice or it was never sent.
3. Don't attend meetings.
4. If you do, then make it about every fourth, so that you can't possibly know what was done at previous meetings, and it makes it easier to plead ignorance if you break a rule.
5. If you do attend a meeting come late, and you won't hear the minutes.
6. If too wet or too dry, too hot or too cold, don't think of coming.
7. Kick if you are not appointed on a committee; and if you are appointed, never attend a meeting.
8. Don't have anything to say when called upon, but
9. Always discuss the most important Association matters in the street or over a bar.
10. If you do attend a meeting always find fault with the proceedings as well as the work done by other members.
11. If you are asked to furnish statistics to advance the claims of the Association or a brother builder, don't reply to the letter.
12. Never reply to any Association letters.
13. Hold back your affiliation or other fees, or don't pay them at all.
14. Never introduce a builder who you think would like to join the Association.
15. Don't attend dinners or any social function organized by the Association.
16. Don't do anything more than you can possibly help to further the aims and objects of the Association; refuse to use any talent you possess unless a grateful allusion is made to it from the chair at every meeting; never lose an opportunity of insinuating that "So-and-so" is evading all the rules; never praise a fellow-contractor, but always decry him, and always leave the impression that without you the Association would be in gross darkness.—Cape Town Architect, Builder and Engineer.

Decorator Wants Coast Opening

An architect and decorator educated in Massachusetts Institute of Technology, class '96, having practiced architecture, specializing in all branches of interior work for twelve years in New York City, and for the past ten years the successful sales manager of building construction work with a national reputation, desires to use his knowledge in any capacity where energy and the proper and necessary education will be a great asset. No objection to change in location. (Signed) W., care Architect and Engineer.

WHITE BROTHERS

HARDWOOD

LUMBER
TIMBER
FLOORING
VENEERS
PANELS

FIFTH and BRANNAN STREETS

THE LARGEST STOCK OF HARDWOODS IN THE WEST

SAN FRANCISCO, CAL.

NATURALLY the safety of persons using the garages you design, is a primary consideration.
The Stanley Garage Door Holder locks the door open and prevents damage and injury which may be caused by the accidental slamming shut of garage doors.

The Hardware that it is a pleasure to Specify Because of the thorough Satisfaction it gives

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Leaky Basements Made Waterproof

By O. ROBINSON in Concrete

MY work in the last five years has been mostly repair work. I have waterproofed something like 50 or more basements of all kinds, the largest being a school, 32x50 feet, two stories, with full basement. The water was 18 inches deep when I took the contract. The contractor had a sump on the outside of the building, with 3-inch centrifugal pump, automatic motor driven, and when he laid his floor he pumped most of the cement away with the water, leaving the floor porous all over. My first work was to dig a trench through the old floor, through sand and gravel 18 inches deep, to lower water level, and covered the trench with a reinforced concrete floor. I then plastered the inside walls one-half inch thick with mortar, one and one-half inches of fine sand. There were two brick walls 10 feet apart the short way; these I plastered 30 inches high on all sides, using 12 pounds of Ironite to every 100 square feet of surface for all plastered work.

I then laid a 6 inch floor of 1:2:4 concrete, using American fence wire for reinforcing, floor being laid without stopping. The top coat was laid the next day, using three-fourth inch screeds and treating floors as side walls. After standing for 10 hours, I pumped the water back into the basement, 18 inches deep, or to its own level on outside, let it stand seven days, pumped out water and dried out.

The school board turned irrigation water into ditches 6 feet away from the school house to test out. All O. K. That was seven years ago and all the others have been treated the same, except a boiler room and cool room 15x30 feet, under a theatre, 16 feet deep, with 5½ feet of river pressure. The coal floor was one foot higher than boiler room floor, so we moved boiler into the coal room, cleaned the floor with muriatic acid straight. I used a 2-inch top. Took pressure away by drilling three-fourth inch holes in walls, using three-fourth inch pipe.

There is always a great deal of trouble with water under furnace floors, under fire grates. They will either burn out or crack, no matter how deep the concrete floor is, on new work or old. To remedy this, raise the boiler six or eight inches, then lay down building paper on the old floor after it is waterproofed. Lay new floor on the paper so it will not bond to old floor. Mix the concrete 1:1½:3. Firebrick is, however, better as a heat absorber.

Home Building in Portland

The erection of 1500 homes each occupying a lot 50 by 100 feet in dimensions to house shipworkers and others engaged in essential industries, was decided upon at a mass meeting at the Lincoln high school in Portland recently. An executive committee of sixteen members was appointed to take charge of the housing enterprise and bring it to a successful issue. Representatives of labor organizations, lumber mill owners, plumbers and building supply men pledged themselves to furnish their services and materials at cost. Mr. Fred E. Taylor of the Portland Realty Board pledged the support of that organization and Mr. Ellis F. Lawrence pledged the services of the Oregon Chapter of the American Institute of Architects.

Drafting Room Kink

In making drawings of details or other work where there may be considerable erasing, I find it convenient to make the first draft on most any paper. Then, when the changes and erasures have been made, take a sheet of carbon paper and one of drawing paper and transfer the draft to the drawing paper; this saves time and paper and gives a drawing free from erasing. The same idea can be used to get a copy of a plan or detail from a book, instead of using tracing paper. A hard pencil or a sort of stylus may be used to trace the lines.—John Upton, La Fargeville, N. Y., in Concrete.

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Electrical Department

Correct Lighting of School Buildings

THE importance of the proper lighting of school buildings will be understood when it is stated that there are in the United States 20,000,000 school children working at their desks several hours a day. According to statistics, about 10 per cent of these have defective vision.

In order to improve school lighting as far as possible, the Illuminating Engineering Society has formulated a code of lighting for school buildings, making available the best information extant with regard to this subject.

One of the conditions most productive of eyestrain is the glare of an unshaded lamp. The glare from a bright, reflecting surface will also produce this condition in a greater or lesser degree, depending upon the degree of reflection. To remedy this, all lamps should be suitably shaded. They should also be so arranged as to secure a good distribution of light on the work, avoiding objectionable shadows and sharp contrasts.

Walls should have a moderate reflection factor; the preferred colors are light gray, light buff, dark cream and light olive green. Ceilings and friezes should have a high reflection factor; the preferred colors are white and light cream. Walls, desk-tops and other woodwork should have a dull finish.

Basements, stairways, store rooms and other parts of the building where required should have switches or controlling apparatus at point of entrance.

Emergency lighting should be provided at main stairways and exits to insure reliable operation when, through accident or other causes, the regular lighting is extinguished.

All parts of the lighting system should be properly maintained to prevent deterioration due to dirt accumulation, burned-out lamps and other causes. To insure proper maintenance, frequent inspection should be made at regular intervals.

One of the fundamental rules for proper lighting of desks is to have the preponderance of light come from the left side. For this reason many school authorities advocate unilateral lighting, that is, lighting by windows located on one side of the room only, especially for class rooms. This method of lighting is recommended where the rooms do not exceed about 24 feet in width, with windows about 10 feet. If the rooms are much wider than this, bilateral lighting, that is, lighting by windows located on two sides of the room, may be required in order to provide sufficient illumination in every part of the room and at the same time to prevent too great a diversity of contrast in the intensity of light on the work spaces.

To secure the highest lighting value it is recommended that the room be so designed that no working location is more distant from a window than one and one-half times the height of the top of the window from the floor.

Windows at the left and rear, where practicable, are preferable to those on the left and right sides of the room, because of cross shadows created by the latter arrangement. Lighting by overhead sources of natural illumination, although sometimes used for assembly rooms, auditoriums and libraries, with relatively high ceilings, has ordinarily little application in class rooms and has found little favor in practice.

The sky as seen through a window is a source of glare. For this reason the seating arrangements should always be such that the occupants of the room do not face the window.

Tests of daylight in well lighted school buildings indicate that, in general, the glass area does not fall below 20 per cent of the floor area.

As the upper part of the window is more effective in lighting the interior than the lower part, it is recommended that the windows extend as close to the ceiling as practicable.

The lighting value of a window, at any given location in the room, will depend upon the brightness of the sky, the amount of sky visible through the window at the given location in the room, and indirectly upon the reflection factor of the surroundings and the dimensions of the room.

Observations in well-lighted school rooms having a comparatively unobstructed horizon, show that under normal conditions of daylight satisfactory illumination is usually obtained when the visible sky subtends a minimum

vertical angle of 5 degrees at any work point of the room.

In cases in which the horizon is obstructed, as by adjacent high buildings or by high trees, provision should be made for a larger window area than would otherwise be required; also if need be, for redirecting the light into the room by means of prismatic glass in the upper sashes of the windows, or by prismed canopies outside of the windows.

Although direct sunlight is desirable in interiors from a hygienic standpoint, it is often necessary to exclude or diffuse it by means of shades. These shades should perform several functions, namely, the diffusion of direct sunlight, the control of illumination to secure reasonable uniformity, the elimination of glare from the blackboards wherever possible. These requirements make it desirable to equip each window, especially in class rooms, with two shades operated by double rollers placed near the level of the meeting rail. The window shades may thus be raised or lowered from the middle, which provides the maximum elasticity for shading and diffusing the light. The shades should be preferably of yellow-colored material that is sufficiently translucent to transmit a considerable percentage of the light while at the same time diffusing it.

A more complete control of the light may be obtained by the use of two independent sets of shades at each window. Where two sets of shades are used, one should be preferably a very dark green of heavy material that will exclude the light entirely, and the other preferably a yellow-colored material as above described.

It is customary to divide the systems of artificial lighting into three classes, namely, direct, semi-direct, and indirect. This division is arbitrary and the boundary lines are quite indefinite.

A direct lighting system is known as one in which most of the light reaches the work plane directly from the lighting unit, including the accessory, which may be an opaque or glass reflector or a totally enclosing transparent or translucent envelope. Direct lighting systems may be further classified as localized and general or distributing. In the former the units are so placed as to light local work spaces, and in the latter they are well distributed so as to light the whole area more or less uniformly.

A semi-indirect system is known as one in which a portion of the light reaches the work plane directly from the unit and a relatively large portion reaches the work plane indirectly, by reflection from the ceiling and walls. The accessory is usually an inverted diffusing bowl or glass reflector. When this glass has a high transmission factor the lighting effect approaches that of ordinary direct lighting, and when of low transmission the effect approaches that of indirect lighting.

An indirect system is known as one in which all or practically all the light reaches the work plane indirectly after reflection from the ceiling and walls. The accessory is usually an opaque or slightly translucent inverted bowl or shade containing a reflecting medium.

All three of these systems of lighting are in successful use in schools. There has been a growing preference for semi-indirect and indirect lighting, especially since the introduction of modern lamps of great brilliancy. Local lighting by lamps placed close to the work is unsatisfactory except for special cases such as the lighting of blackboards, maps, charts, etc.

Except in very rare instances bare light sources should not be exposed to view. They should always be adequately shaded. Even when shaded by translucent media, such as dense glassware, the lighting units should be placed well out of the ordinary range of vision; in other words, it is recommended that lighting units be of low brightness, even if they are located high in the field of view.

Glossy surfaces of paper, woodwork, desk tops, walls and blackboards are likely to cause eyestrain because of specular or mirror-like reflection of images of light sources, especially when artificial light is used. Matte or dull finished surfaces are recommended. It is to be noted that a high reflection factor does not necessarily imply a polished or glazed surface.

The chief factors which must be considered in arriving at the size and number of lamps to be used in a given room are (1) the floor area, (2) the total luminous flux emitted per lamps, and (3) coefficient of utilization of the particular system considered. The first should be measured in square feet. The second may be obtained from a data book supplied by the manufacturers of lamps. The third involves many factors such as the relative dimensions of the room, the reflection factor of the surrounding, the number of lighting units and their mounting height, and the system of lighting. By coefficient of utilization is meant the proportion of the total light flux emitted by the lamps which is effective on the work plane.

Suitable switching and controlling arrangements should be made to permit of lighting one or more lamps independently as conditions may require.

The teacher's desk may be illuminated by one of the overhead lighting units, or if necessary by a desk lamp.

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With the usual lighting equipments the distance between the units should not exceed one and one-half times the height of the apparent source of illumination above the working level.

Blackboards should be of minimum size practicable and should not be placed between windows. Their position should be carefully determined so as to eliminate the glare due to specular reflection of images of either artificial or natural light sources directly into the eyes of occupants of the room.

Glare due to specular reflection from blackboards may be reduced or eliminated by lighting them by means of properly placed and well-shaded local artificial light sources.—The National Builder.

Industrial Lighting With Mercury-Vapor Lamps*

By WILLIAM A. D. EVANS

ARTIFICIAL lighting in interiors may roughly be divided into two classes, esthetic and industrial; esthetic embracing the lighting installations where the idea prevails of harmonizing the illumination with surroundings; and industrial covering the lighting of manufacturing plants where the prime consideration is to enable the eye to do its work with the greatest rapidity and least fatigue.

Mercury-vapor lamps on account of the peculiar bluish-green color of the light and the tubular form of the light source may be classified as strictly an industrial illuminant.

Among the advantages derived from these characteristics, which makes the light particularly desirable for industrial lighting, are visual acuity, low intrinsic brilliancy and natural diffusion.

The first mercury-vapor lamps for industrial lighting purposes were instal'ed in the composing room of the old building of the New York Evening Post during the summer of 1903. Two 200-watt lamps were placed over the make-up tables. From this small installation in a printing plant has developed the use of mercury-vapor lamps for industrial lighting in all of its different branches, and at the present time one metal working plant alone is using a total of about 2,500 tube lamps.

The industries in which the mercury-vapor lamps have been successfully used are many and varied, and while it has not been possible to collect data regarding every operation which is carried on under the lamps an attempt has been made to gather sufficient material which will enable anyone contemplating installing lamps to follow the practise which has been carried out for simi'ar classes of work. To attempt to classify the entire industrial field would be far beyond the scope of this paper, and it is only possible to give a broad classification.

Following is a general classification of industries in which mercury-vapor lamps are used for illumination:

Metal working plants.
- Foundries.
- Forge and blacksmith shops.
- Machine shops.
- Erecting and heavy machine shops.

Woodworking plants.
Varnish and finishing plants.
Textile plants.
- Silk mills.
- Cotton mills.
- Woolen and worsted mills.
- Knitting mills.
- Embroidery plants.

Newspaper and printing plants.
Paper manufacturing.
Clothing manufacturing.
Power houses.
Glass manufacturing.
Shipping and storage.
Motion picture film manufacturing.

* A paper presented at the ninth annual convention of the Illuminating Engineering Society, Washington, D. C.

Son Succeeds to Father's Business

The business of the Haws Sanitary Drinking Faucet Company, 1808 Harmon street, Berkeley, is being attended to by Mr. A. G. Haws, son of the late L. Haws, founder of the business. The junior Haws will visit the architects and plumbing trade on the Coast in the interests of the company's products.

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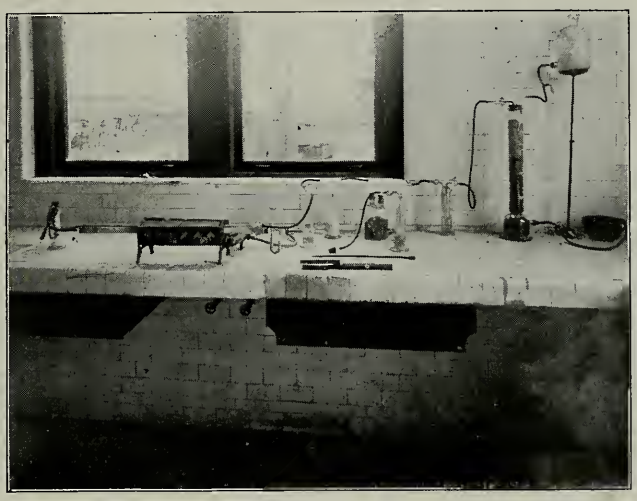

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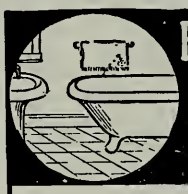
Clay Products Exhibit

VISITORS to the Liberty Fair at Exposition Park, Los Angeles, were impressed by the very complete and interesting exhibit of clay products from the kilns of the Los Angeles Pressed Brick Company in the Manufacturers and Liberal Arts building. This company's products have a wide range and each of them has the high quality that one would expect from a factory which specialized in its production. All the various lines were cleverly and artistically displayed. These comprise architectural terra cotta, face and enameled brick, hollow terra cotta blocks, roofing tile, quarry tile and the famed newest product, "Larsonite," the non-absorptive burned clay which floats in water and which the United States Government is using for aggregate in the concrete for ships now building at Oakland and San Diego. It will give these stone ships buoyancy and strength which could not be obtained by the use of any other known material.

Various kinds of face brick shown comprised pressed brick, rough texture brick and wire cut brick in a large variety of colors, including some new to the trade. Of particular interest were the roofing tiles in new and exclusive colors. Environment and the varying color treatment of the walls of buildings often require colors other than red for the roof. A notable illustration is found in the roofing tile being used on the permanent buildings for the United States Government army and naval aviation schools at Rockwell Field, North Island, San Diego. The tile is being furnished by the Los Angeles Pressed Brick Company. In order to enhance the architectural effect roofing tile of a great variety of shades is being laid. Those on the naval aviation buildings range from black and gun metal colors through various shades of golden color and red from dark to light tones. These buildings were designed by Mr. Bertram Goodhue of New York, Mr. C. M. Winslow of Los Angeles being the supervising architect. Roof tiles on the army aviation buildings range from gun metal to various light golden shades and reddish brown. Mr. Albert Kahn of Detroit designed the army school buildings and Messrs. Mead & Requa of San Diego are the supervising architects. About 650 squares of tile roofing are required to cover both groups of buildings.

Special features of the Liberty Fair exhibit of hollow terra cotta blocks were the Heath unit tile and the new silo tile. Approximately 90 per cent of the hollow tile used in the buildings on Rockwell Field are of the Heath unit type, the quantity furnished by the Los Angeles Pressed Brick Company running into thousands of tons. This company also has a contract for furnishing 2700 tons of ordinary hollow tile for the big Government hospital now being erected at Whipple barracks, near Prescott, Ariz.

This company is the only one on the Pacific Coast making the new burned clay silo tile. These tile have a groove in the top and bottom to take care of the longitudinal steel reinforcing rods which are placed in every course to thoroughly bind the circular structure together. Several silos have been con-



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structed of this tile in the vicinity of Ontario and Artesia. These tile make not only a very substantial and serviceable silo, but also one that is very sightly and does not require exterior plastering.

Gas Steam Heat Proves Its Merit

The gas steam radiator is growing in popularity and many architects are now specifying them in preference to coal-burning heaters. One of the most satisfactory gas steam radiators on the market is the Clow, the San Francisco agency for which is controlled by Mr. F. A. Hamilton, with show rooms at 101 Rialto building. The following are some of the attractive features of the Clow "Gasteam" radiators:

In heating efficiency the Clow differs from the ordinary steam radiator in that it carries a higher steam pressure and maintains that pressure without variation by automatic control. Each radiator is complete in itself—an independent heating plant. There are no steam or water pipes—the only connection is a gas pipe. Unlike a boiler system, it is possible in the Clow "Gasteam" system to heat any radiator or any desired number of radiators without starting the entire plant.

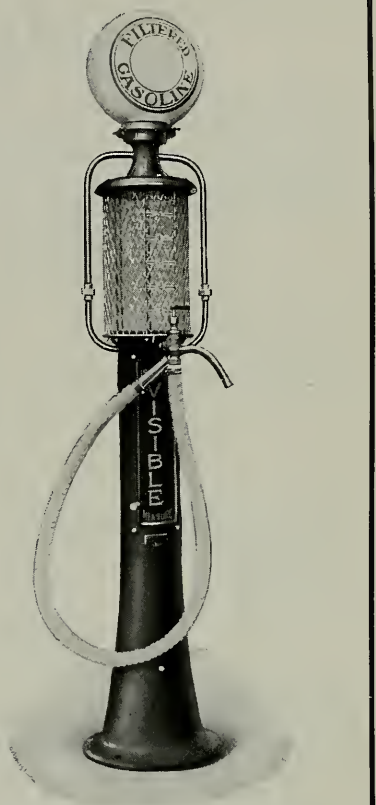
The Clow "Gasteam" heating system is "elastic" because you have steam heat always available when and where you want it, and you do not have any cost for heating rooms where heat is not required.

Occupants of a room heated by Clow "Gasteam" radiation can detect no effect on the air—contrary to the popular delusion that the use of gas necessarily vitiates the air by burning up the oxygen. The radiator uses less than 2 per cent of the air to induce combustion, a negligible quantity of no practical consequence.

The report of an exhaustive test carried on in the laboratory of the Peoples Gas, Light and Coke Company, Chicago, says: "During the tests no unusual or disagreeable odors were observed." There is also certain moisture produced, varying in amount with the gas used.

Addition to Office Building

Among the building projects promised this year is the construction of a seven-story addition to the three-story Class A Mutual Life Insurance building at the southeast corner of California and Sansome streets, San Francisco. This property has been purchased by the Balfour-Guthrie Company. Mr. L. B. Dutton was for a long time architect for the Balfour-Guthrie Company. Mr. Dutton retired from active practice several years ago and is now living on a ranch near San Jose.



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PROGRAMME

Gladding, McBean & Co., manufacturers of clay products, propose a competition among architectural draftsmen for a design for a factory office building.

The building should be designed in a manner appropriate to its use and purpose, and not merely as an illustration or sample of the products of the company.

The exterior and interior walls will be of face brick, approximately 12 inches thick. Terra cotta may be used in conjunction with the brick. The roof is to be of Cordova tile. The interior floors, partitions and roof construction will be of wood. The foundations will be of concrete or common brick.

The design should be simple in character.

SITE

The office building will be located on the State Highway, at the plant of Gladding, McBean & Co., in Lincoln, Placer county, California.

REQUIREMENTS

The building is to be approximately 32 feet by 64 feet, of two stories in height, and not necessarily rectangular.

It is not the intention to finish the interior of the second story at present.

The following office and service rooms are required on the first floor:

Main office, with counter in lobby . . . 450 sq. ft.
Vault, opening off main office . . . . 150 sq. ft.
Supply room, opening off main office . . . . . 400 sq. ft.
(This supply room should be conveniently located to be reached from the outside for convenience in delivery and discharge of supplies.)
Superintendent's office . . . . . 250 sq. ft.
Assistant Superintendent and Stenographer's office . . . . . 200 sq. ft.
Lobby . . . . . 200 sq. ft.
One clothes closet . . . . .
One stationery supply room . . . . .
Two toilets . . . . . } 150 sq. ft.

Proper provision should be made for stairway leading to the second floor.

The areas noted are approximate only and are given to indicate the relative importance of the various subdivisions. A variation of 10 per cent in total area is permissible.

DRAWINGS REQUIRED

The drawings required shall consist of two sheets only, 19 inches by 25 inches in size. On the first sheet shall be placed the first floor plan, an elevation, and a section, at a scale of ⅛ inch to 1 foot. On the second sheet there should be shown a perspective.

Any particular feature or features of the design shall be on the sheet first referred to, and drawn at a scale of ½ inch to 1 foot.

Entire liberty as to manner of presentation is allowed, as it is desirable that the imagination of the designer shall not be hampered by any restrictions which will prevent the full expression of his ideas. However, it is understood that the judgment is to be rendered on the basis of design, and not on presentation.

METHOD OF DELIVERY

The drawings should be delivered at the office of Gladding, McBean & Co., 11th floor Crocker Building, San Francisco, California, before five o'clock on the 28th day of February, 1919.

Drawings shall be delivered flat, without any mark of identification, and shall be enclosed in a sealed wrapper, on the outside of which shall be lettered, "Gladding, McBean & Co., Crocker Building, San Francisco, California," and the title, "Competition for a Factory Office Building."

The wrapper shall contain with the drawings a sealed envelope, enclosing the name and address of the competitor. No marks of identification of any kind whatever will be permissible on either wrapper or drawings.

THE JURY

The jury will consist of members of the Faculty of the Department of Architecture of the University of California.

This jury will award a first, second and third prize, based on their judgment as to the appropriateness of the design for the purpose mentioned.

If the designs do not come up to the standards required by the jury, the company reserves the right to withhold the award of one or any of the prizes.

THE PRIZES

The prizes, which shall be awarded in sequence to the authors of the designs selected by the jury, shall be:

First prize	$150.00
Second prize	100.00
Third prize	50.00

Any departure from the requirements of the programme, as to size and number of drawings or general requirements of the plan, or any other violation of the directions given, will be considered by the jury as a reason for disqualification.

In justice to the competitors who follow the requirements mentioned, disqualification for noncompliance will be rigidly enforced.

The prize drawings are to become the property of Gladding, McBean & Co., and right is reserved to publish and exhibit all or any of the others.

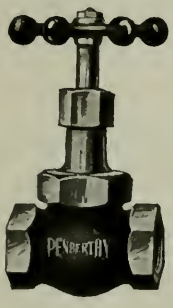
After the judgment there will be an exhibition of the drawings in the offices of the company for six days, to view which all who are interested are cordially invited.

NOTICE

Although Gladding, McBean & Co. desire to procure a design to be used in the execution of an office building, it is expressly understood that they are in no way bound to construct the design which may be selected for prizes, and that their responsibility ends with the awarding of the prizes enumerated.

This competition is instituted for educational purposes as well as in the hope that a suitable design may be procured for the factory office building, and in case one of the designs is built, an additional bonus of $50.00 will be paid for the use of the design.

The competition approved by the Committee on Education, San Francisco Chapter of the American Institute of Architects.



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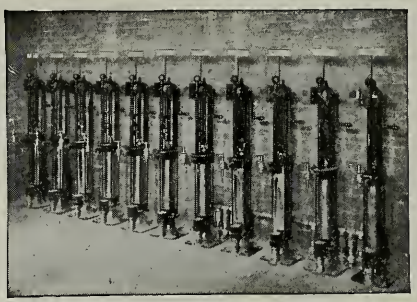
Photos of French Architecture for Art Palace

The French Government has presented the management of the Palace of Fine Arts, San Francisco, with a collection of rare photographs of architectural dioramas and reproductions of classic French sculptors. The collection comprises beautiful realistic models of various notable architectural monuments such as the old Cloister of the Augustines at Toulouse, famous for its beautiful Gothic capitals, built in the XIV century. The old Cloister forms at the present time part of the Toulouse museum; here is a realistic representation of the ancient, castelated city of Carcassonne, which is generally believed to have been founded by the Phoenicians. The latter is a perfect reproduction in miniature of the walls, turrets, towers and approaching roads that lead into the town. An unusually beautiful model presents a section of the interior of the famous Cathedral of Chartres, generally regarded as one of the most beautiful examples of Gothic architectures in the world. In distinct contrast to the foregoing is the big clock gate at Rouen which presents a characteristic example of the architecture of the Renaissance period built in 1511; the celebrated abbey surmounting the Mont St. Michel dating back to the eighth century is shown across the ebbing waters that surround it. And here one finds an excellent representation of the impressive Chateau of Amboise on the river Loire, near which the painter of "Mona Lisa" lies buried in the chapel of St. Hubert, whose spire is seen in the distance. A typical example of Renaissance architecture is presented in the Chateau of Azy-Le Rideau, built in the sixteenth century, now used as a museum of Renaissance art.

As a contrast of these architectural subjects there is the beautiful panoramic view of the valley Chamonix, the most famous of Alpine centers, and the center of winter sports in France. Another of these dioramas presents a view of Marseillaise as seen from the deck of a pleasure yacht lying in the busy harbor crowded with boats and shipping, while the purely social side of France is presented in the beautiful gardens of the Casino at Vichy, with its stylishly garbed promenaders. That noble monumental structure, the Cathedral of Bourges, is here represented with its cloistered gardens and surrounding environment, the stately dark walls of the Chateau Chenonceaux, perhaps the most notable of the many notable chateaux in Touraine, is here presented as seen from the right bank of the river Cher.



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Supplementing these models of the immortal French architectural monuments are several fine reproductions of classic sculpture, such as Fountain of the Fauns from the gardens of Versailles, which has been presented by Mrs. Francis Carolan as part of the collection, and the beautiful bust, a fragment of the group of the "Dance" by Carpaux in the Paris opera, presented by M. Felix Passot, who is also the donor of the beautiful wrought iron balcony railing from an old hotel in Paris of the epoch of Louis XVI.

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Maple is one of the first trees to herald returning spring, the sap "running" freely early in March before the snow is off the ground. From early spring to late fall its growth is steady and uniform. The outcome is a gradual wood growth which is compact in structure, fine grained and uniform in texture.

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Medusa Waterproofing

The Sandusky Cement Company of Cleveland, Ohio, has just published a new booklet describing Medusa waterproofing and giving detailed directions for its use. A number of half-tone pictures are shown of buildings and swimming pools that have been waterproofed with Medusa compound.

The following brief treatise on the theory of waterproofing will be found instructive to those who have occasion to specify or use the Medusa product:

To understand what Medusa waterproofing does it is necessary to consider the physical nature of concrete. Being composed of irregularly shaped particles, it is impossible for the mass to be more than comparatively dense. Ordinary concrete, though possessing many points of excellence such as strength, resistance to wear and permanence, usually contains over 20 per cent of voids, and it must accordingly be classed as a porous material. By the use of hydrated lime the pores may be to some extent filled, sufficient plasticity being acquired by this addition to give slightly greater density to the mass. Hydrated lime, however, cannot be classed as a waterproofing material since it absorbs water readily.

The force against which we have to contend, in order to reduce water absorption of concrete is the capillary attraction exerted by these minute pores or tubes. This may be demonstrated by observing the action of a sheet of blotting paper of which one corner is dipped in water. The water will be drawn up in the sheet despite the force of gravity. The force used to overcome this absorptive tendency is the force of surface tension.

In order to waterproof concrete successfully, the ideal material is a finely divided, strongly water-repellent compound or a liquid paste which upon contact with the alkaline earth bases present in cement forms a strongly water-repellent compound. It must possess the characteristic of forming a thin film, capable when properly supported of holding back by surface tension and its own cohesion the layer of water to which it is exposed. Such a material must be cheap and efficient enough to do the work when added to the cement in sufficiently small quantity not to affect the strength. It must be proof against oxidation and such chemical action as may be met with from the concrete or atmosphere. And last but not least, it must demonstrate in actual work that the concrete in which it is used is waterproof, even after a reasonably long period of time. Medusa waterproofing fulfills these requirements and has proved thoroughly satisfactory on thousands of important pieces of construction.

Municipal Warehouses

The Stockton city council is planning to build additional sheds along Stockton channel east of the mouth of McClouds Lake on both sides of the harbor. A steel frame and corrugated iron shed, designed for future extensions, is contemplated.

BOOK REVIEWS

THE OPEN-AIR THEATRE, by Sheldon Cheney. Published by Mitchell Kennerley, New York City. 1918. 188 pages, 51 illus., $3.00 net.

A remarkably complete and interesting account of the open-air theatre, and of the forms of drama suitable for production out-of-doors. The ancient Greek and Roman playhouses and the mediaeval religious theatres are treated incidentally, but most emphasis is put upon the current revival of interest in outdoor productions.

Among the European theatres that are illustrated and described are the Arena Goldoni, the Bradfield Greek Theatre, the Harz Mountain Theatre, the Klampenborg Woods Theatre, the Mannheim Garden Theatre, and the Warsaw Park Theatre. Among the American examples the following are pictured and described: the Greek theatres at Berkeley, Point Loma, Cranbrook, Pomona and Bakersfield; the Peterborough Pageant Theatre, the Bohemian Grove Theatre, the Bankside Theatre, the Brookside Theatre and the Rosemary Theatre. There are also photographs and descriptions of many of the playhouses of Greek and Roman times, and of numerous less-known nature and garden theatres in this country and Europe.

This is a book that may prove indispensable for architects, landscape architects, designers, or producers of pageants, and for theatregoers that are interested in the revival of the art of the theatre.

The Latest—An Annual Report with Moving Pictures

It is announced by Mr. Tampton Aubuchon, general manager of the Louisville Industrial Foundation, the so-termed Million Dollar Factory Fund of Louisville, that the organization's annual report to the stockholders will be partly rendered in motion pictures.

About twenty new industries have been located in the city of Louisville as the result of the Foundation's activities, and camera men are busily engaged in Louisville in photographing the salient features of the various new factories in order that an intimate review of the industries, their processes and products may be presented to the stockholders and the citizens of Louisville. It is the idea of the Foundation directors that the stockholders and citizens should be afforded an opportunity to visit all of the new plants located in the city, and the motion picture method was adopted as the most practicable.

The film will include views of the manufacture of automobile axles, overalls, clothing, tobacco, wood products, soap, oil, bed springs, heating apparatus, furniture, etc. It will be expressive in a measure of the character of industries located in Louisville, as well as the type of skilled mechanics employed.

The idea of presenting an annual report in moving pictures is unique and it is believed to be original in its application in Louisville. The motion picture manufacturers of the country are keenly interested in the success of the idea, for it is hoped that through Louisville's experiment the cinematograph will ultimately be utilized as an assistive force in the development of communities and in the solution of civic and industrial problems.

Something About Bathtubs

BATHTUBS are so common today that it is almost impossible to imagine a world without them. And yet the first American bathtub was installed and dedicated so recently as December 20, 1842, and as late as 1843 it was actually unlawful to bathe.

Curiously enough, the scene of its setting up was Cincinnati, then a squalid frontier town. But Cincinnati, in those days, as in these, contained many enterprising merchants, and one of them was a man named Adam Thompson, a dealer in cotton and grain. This trade frequently took him to England, and in that country, during the '30s, he acquired the habit of bathing.

The bathtub was then still a novelty in England. It had been introduced in 1828 by Lord John Russell, and its use was yet confined to a small class of enthusiasts. Moreover, the English bathtub, then as now, was a puny and inconvenient contrivance—little more, in fact, than a glorified dishpan—and filling and emptying it required the attendance of a servant. Taking a bath, indeed, was a rather heavy ceremony, and Lord John in 1835 was said to be the only man in England who had yet come to doing it every day.

Thompson who was of inventive fancy—he later devised the machine that is still used for bagging hams and bacon—conceived the notion that the English bathtub would be much improved, if it were made large enough to admit the whole body of an adult man, and if its supply of water were admitted by pipes from a central reservoir and run off by the same means.

There was then, of course, no city water supply, at least in that part of the city, but Thompson had a large well in his garden, and he installed a pump. This pump, which was operated by six negroes, much like an old-time fire engine, was connected by a pipe with a cypress tank in the garret of the house, and here the water was stored until needed. From the tank two other pipes ran to the bathroom. One carrying cold water was a direct line. The other, designed to provide warm water, ran down the great chimney of the kitchen and was coiled inside of it like a giant spring.

The tub itself was of new design and became the grandfather of all the bathtubs of today. Thompson had it made by the leading Cincinnati cabinet maker, and its material was Nicaraguan mahogany. It was nearly seven feet long and fully four feet wide. To make it watertight, the interior was lined with sheet lead, carefully soldered at the joints. The whole contraption weighed about 1750 pounds, and the floor of the room in which it was placed, had to be reinforced to support it. The exterior was elaborately polished.

In this luxurious tub Mr. Thompson took two baths December 20, 1842, a cold one at 8 a. m. and a warm one sometime in the afternoon. The warm water, heated by the kitchen fire, reached a temperature of 105 degrees. Christmas Day, having a party of gentlemen to dinner, he exhibited the new marvel to them and gave an exhibition of its use, and four of them, including a French visitor, Colonel Duchanel, risked plunges into it. The next day all Cincinnati had heard of it, and the local newspapers described it at length, and opened their columns to violent discussions of it.

On the one hand it was denounced as an epicurean, and obnoxious toy from England, designed to corrupt the democratic simplicity of the republic, and on the other hand it was attacked by the medical faculty as dangerous to health and a certain inviter of "phthisic, rheumatic fevers, inflammation of the lungs and the whole category of zymotic diseases."

The noise of the controversy soon reached other cities, and in more than one place medical opposition reached such strength that it was reflected in legislation. Late in 1843, for example, the Philadelphia Common Council considered an ordinance prohibiting bathing between November 1 and March 15, and it failed of passage by but two votes. During the same year the Legislature of Virginia laid a tax of $30 a year on all bathtubs that might be set up. In Hartford, Providence, Charleston and Wilmington, Del., special and very heavy water rates were levied upon those who had them. Boston early in 1845 made bathing unlawful except upon medical advice, but the ordinance was never enforced, and in 1862 it was repealed."—New York Mail.

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FEBRUARY, 1919

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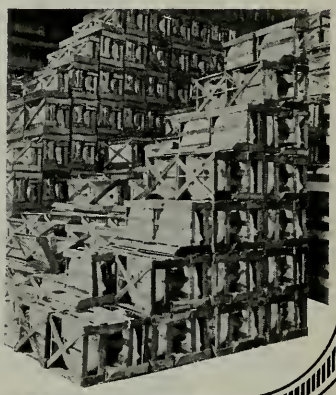

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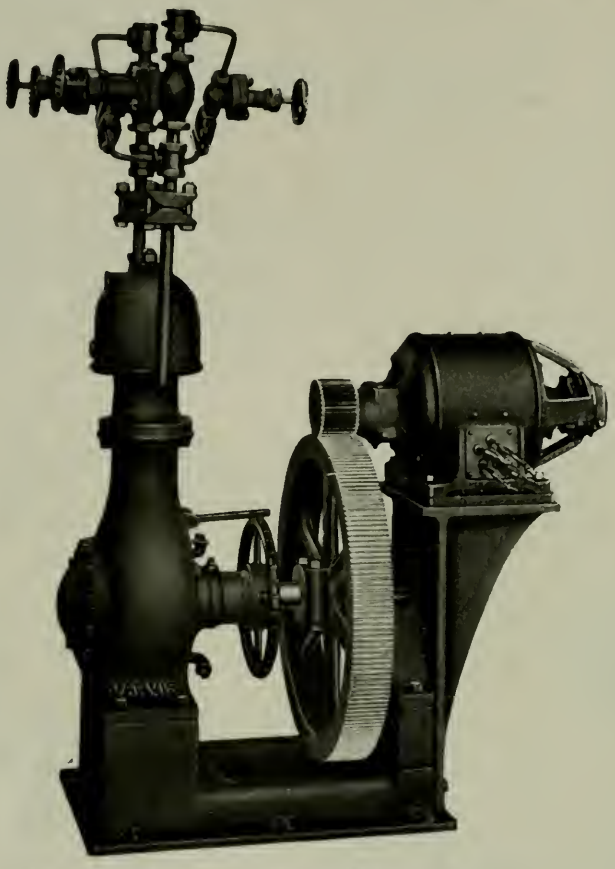

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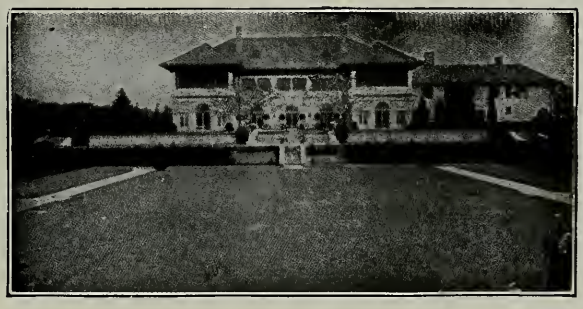

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Livermore Fire Brick Works, Livermore, Cal.

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SPECIAL PRICES TO ARCHITECTS AND CONTRACTORS

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233 GRANT AVENUE, SAN FRANCISCO
Telephone SUTTER 180

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT
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- Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

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- The Paraffine Companies, Inc., 34 First St., San Francisco.

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- Mauerene Likwid Sement, sold by the Imperial Company, Monadnock Bldg., San Francisco.
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- Paraffine Paint Co., 34 First St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.

CEMENT FLOOR COATING
- Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

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- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
- Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

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- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.
- H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

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- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker, Clunie Bldg., San Francisco.
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.

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- Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.

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- Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
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- R. W. Littlefield, 565 Sixteenth St., Oakland.
- Houghton Construction Co., Flatiron Bldg., San Francisco.
- Bos & O'Brien, Hearst Bldg., San Francisco.
- Larsen, Sampson & Co., Crocker Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- A. D. Collman, 110 Jessie St., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
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"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

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Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
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FIRE ESCAPES

Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE EXTINGUISHERS

Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS

Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIRE RETARDING PAINT

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent, Crossley Building, San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Grant Gravel Company, 603 Flatiron Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., Underwood Bldg., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Holloway Expanded Metal Company, 517-39 Second St., San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
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S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

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Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.

METAL LATH
Holloway Expanded Metal Company, 517-539 Second St., San Francisco.

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Dudfield Lumber Co., Palo Alto, Cal.
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OIL BURNERS
- American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL FILTERING AND CIRCULATING SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

OIL STORAGE AND DISTRIBUTING STATIONS
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- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- Sartorius Company, Inc., 15th and Utah Sts., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles. Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

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- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- Aspromet Company, Hobart Bldg., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- Magner Bros., 414-424 Ninth St., San Francisco.
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PIPE STEEL
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
- U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
- MacGruer & Co., 180 Jessie St., San Francisco.

PLUMBING CONTRACTORS
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.

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POTTERY
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PUMPS
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Krogh Pump & Machinery Co., 149 Beale St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.
Woodin & Little, 33-41 Fremont St., San Francisco.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., Underwood Bldg., San Francisco.
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
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United Materials Co., Crossley Bldg., San Francisco.
Aspromet Company, Hobart Bldg., San Francisco.

SAFETY TREADS
Pacific Building Materials Co., Underwood Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SKYLIGHTS
Aspromet Company, Hobart Bldg., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
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The Paraffine Companies, Inc., 34 First St., San Francisco.

STEEL REINFORCING
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles; W. B. Kyle, San Francisco representative, Call Bldg.
Woods, Huddart & Gunn, 444 Market St., San Francisco.

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TELEPHONE AND ELECTRIC EQUIPMENT
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Direct Line Telephone Co., 320 Market St., San Francisco.

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C. F. Weber & Co., 365 Market St., San Francisco.

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR FLOORING
Holloway Expanded Metal Company, 517-539 Second St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

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W. E. Mushet Co., 502 Mission St., San Francisco.
Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.

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N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
Aspromet Company, Hobart Bldg., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

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"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
Keller & Coyle, 233 Grant Ave., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 478 Sutter St., San Francisco, and 402 Fifteenth St., Oakland.

WATERPROOFING FOR CONCRETE, BRICK, ETC.
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Co., Monadnock Bldg., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Building Materials Co., 523 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewance Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

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"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOWS—REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.

WIRE FENCE
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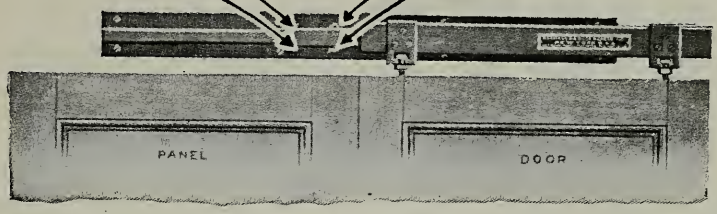

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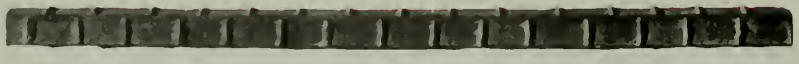

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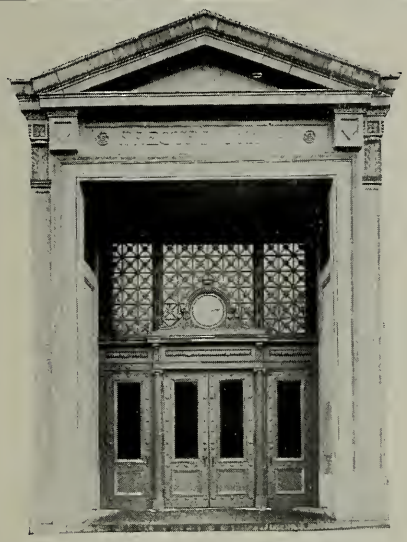

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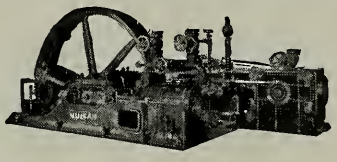

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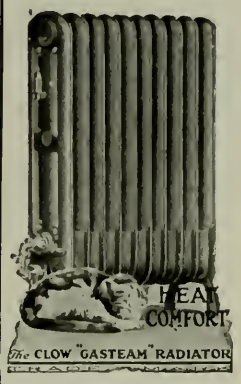

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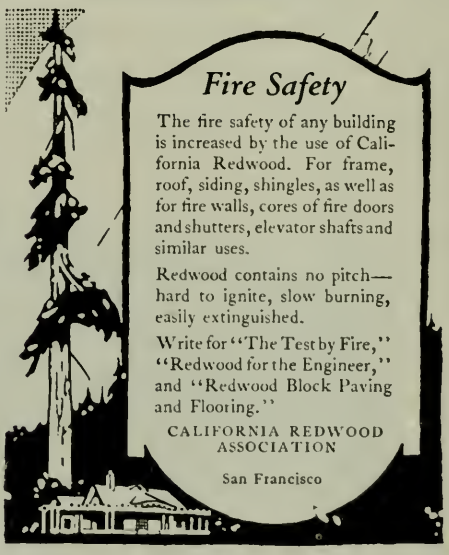

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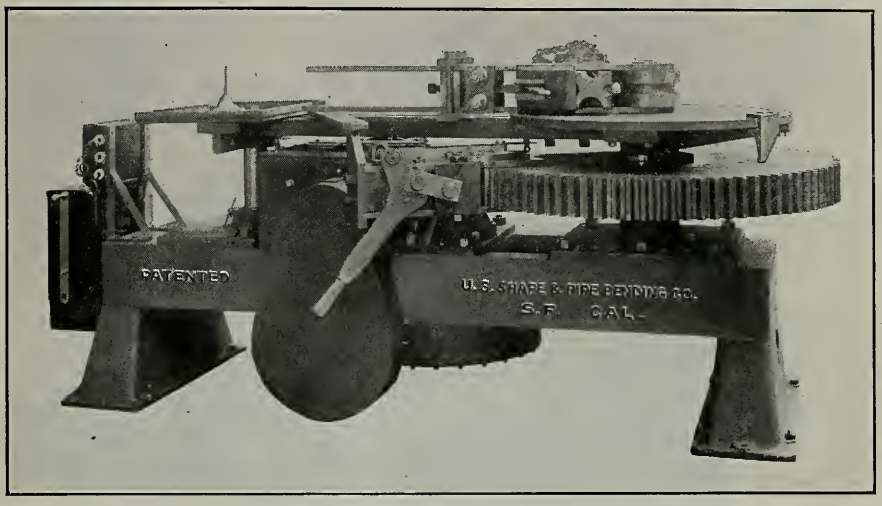

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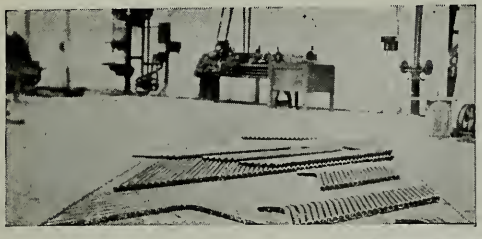

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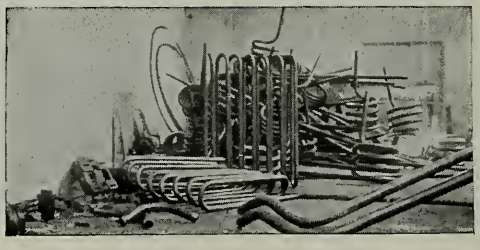

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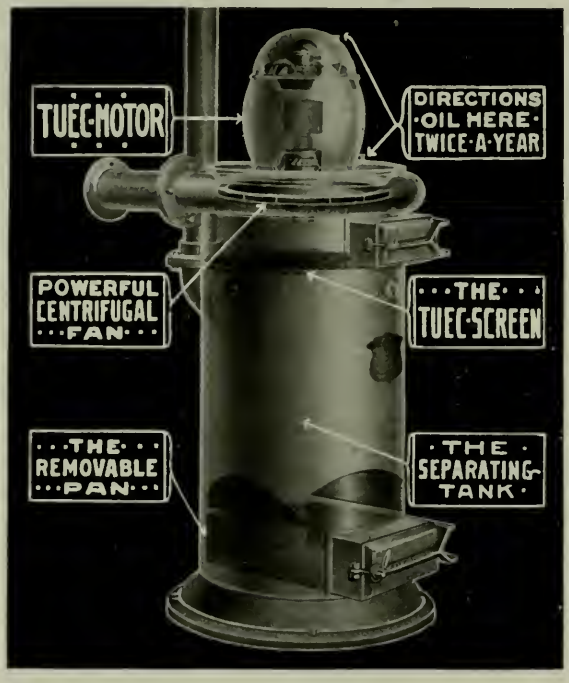

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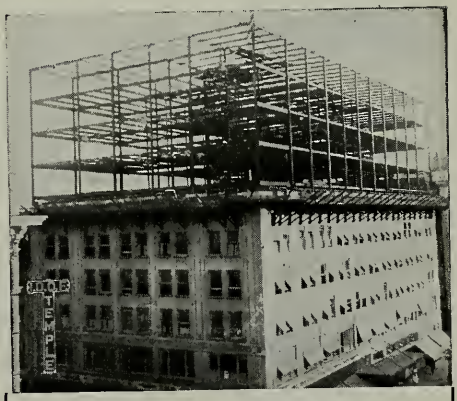

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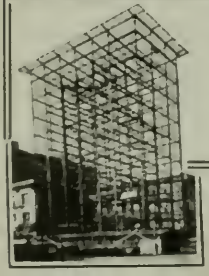

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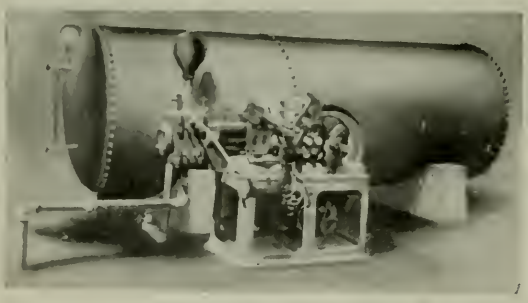

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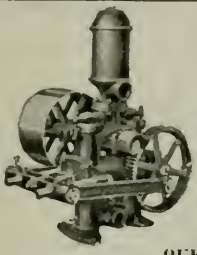

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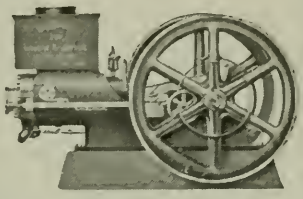

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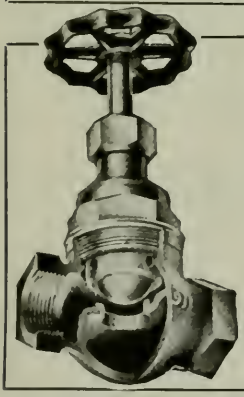

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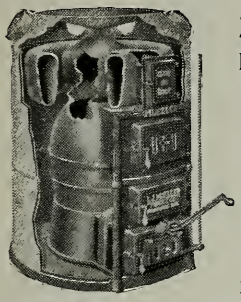

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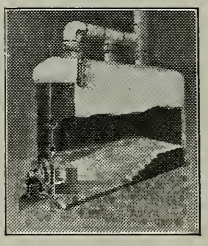

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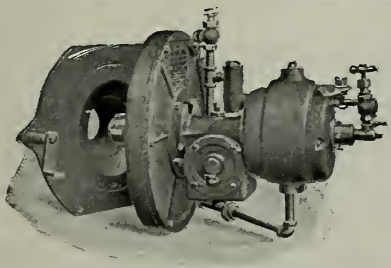

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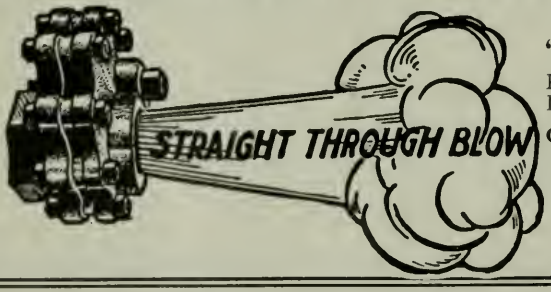

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The Architect and Engineer

Volume LVI. OF CALIFORNIA Number 2.

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ADMINISTRATION BUILDING, FROM STATE HIGHWAY.
UNION HIGH SCHOOL, PALO ALTO, CALIFORNIA
ALLISON & ALLISON, ARCHITECTS

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

FEBRUARY, 1919 Vol. LVI. No. 2

The Palo Alto Union High School

By SIDNEY D. TOWNLEY*

THE views of the Palo Alto Union High School in this number of The Architect and Engineer show a group of buildings in which the people of Palo Alto and the vicinity feel very considerable pride. As is often the case, especially in the formation of a union district, many difficulties arose and many differences of opinion developed during the progress of the enterprise. It is not my purpose to recount here all the difficulties encountered in forming the union district, in selecting the site, in voting the bonds, in choosing the architect, in considering plans, and finally in the heartbreaking task of changing and eliminating some of our most cherished ideas in order to get the cost of the building within the bond issue, when the wages of labor and the price of materials were mounting skyward every day.

The Palo Alto Union High School District is composed of three districts, Palo Alto, Mayfield and Stanford, and the new building is located on a tract of thirty acres, lying between the State Highway and the Southern Pacific Railway, near the population center of the three districts. The land on which the school stands has been leased from Stanford University for a period of ninety-nine years, and the Trustees of that institution have very generously given the use of the land for the nominal rental of a dollar an acre per year.

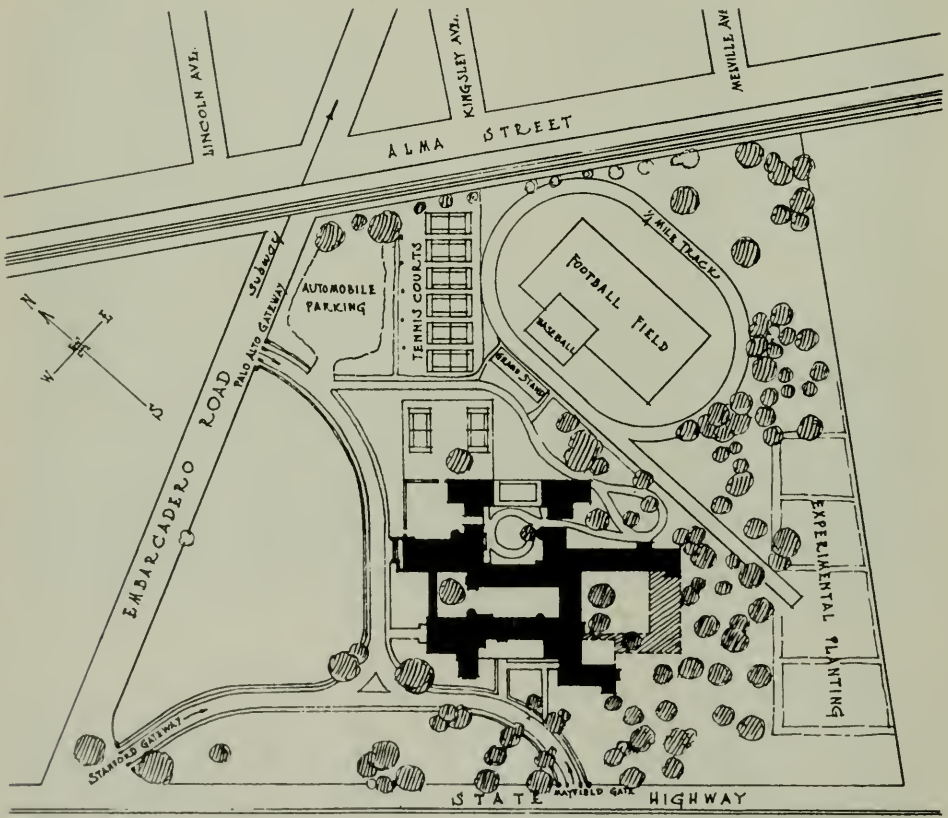
The buildings were designed by Messrs. Allison and Allison, architects of Los Angeles, and the High School Board, the school faculty, the pupils and the residents of the district are well pleased with the result of their work in creating a group of buildings, conveniently arranged, devoid of useless ornamentation, yet possessing much artistic beauty in an almost severe simplicity of design.

As will be seen from the illustrations, part of the buildings are two-story structures and part one-story. The two-story parts are of brick, reinforced with steel rods, and finished with a plaster exterior. The one-story parts are of frame construction with the same exterior finish. The original

* Member of the High School Board and of the Building Committee.

plans called for brick or concrete construction throughout, but on account of the excessive cost it was necessary to change the construction of the one-story portions to wood. This we do not regret, for the construction seems to be ample for such structures, and for such a scattered group of buildings with numerous exits and located in an isolated position, it seems to be altogether unnecessary to go to the expense of fireproof construction. I have been asked several times why brick was used instead of concrete in a region subject to earthquakes. From a study of the effects of various earthquakes I am convinced that a properly constructed, reinforced brick building is just as good as a concrete building. The reason that so many brick buildings have suffered serious damage under severe earth movements is, that they have not been properly constructed. Reinforcing rods were not used, the mortar did not contain sufficient cement and the bricks were not properly soaked before they were laid.

The main two-story part faces the State Highway and contains the offices, a study hall and fourteen class rooms. Projecting from it toward the highway is the library, the portion with a Gothic roof and shown well in one of the illustrations. The library is one of the special features of the



TOPOGRAPHIC PLAN OF SITE AND IMPROVEMENTS
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THE SITE CONTAINS THIRTY ACRES AND MORE THAN ONE HUNDRED OAK TREES

AUDITORIUM AND ADMINISTRATION BUILDINGS, UNION HIGH SCHOOL, PALO ALTO
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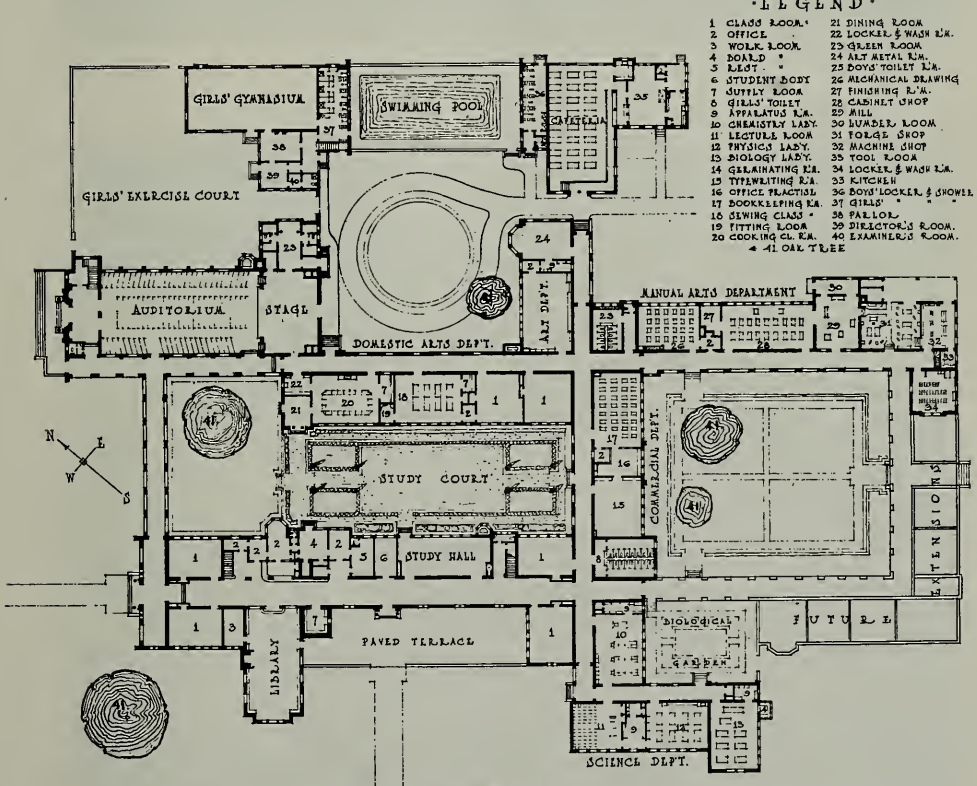

·MAIN FLOOR PLAN·

UNION·HIGH·SCHOOL PALO·ALTO·CALIFORNIA·

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ADMINISTRATION BUILDING, FROM STATE HIGHWAY, UNION HIGH SCHOOL, PALO ALTO
Allison & Allison, Architects

NORTH ENTRANCE, ADMINISTRATION BUILDING, UNION HIGH SCHOOL, PALO ALTO
Allison & Allison, Architects

building. It is a spacious room, 33x46 feet, with built-in book cases on three sides, a fire place and numerous high windows, which provide an abundance of light. Eight large reading tables are to be provided. In these days when much attention is being given to manual training, cooking, sewing and typewriting, it is well for us to bear in mind that after all books are the chief tools of education. We can, if necessary, get along without manual training and its allied subjects, but it would be very difficult to get along without books. We have thought, therefore, that a spacious, well-equipped and inviting library, placed in a prominent position where every pupil must see it, may cultivate in many of them a desire to know more of what is contained within the covers of the books.

To the right of the main building, as one stands facing the main structure, are the science departments, consisting of a lecture room and three laboratories, chemistry, physics and biology. Going back from these buildings one comes to the rooms of the commercial department. Back of the main building and across a court are the rooms for domestic science and sewing, and to the rear of these in one direction are rooms for drawing, metal work, mechanical drawing and manual training, and to the rear in the other direction is the auditorium with a large stage and a seating capacity of 850. It was necessary to omit, for the present, the interior finishing of the auditorium. It will be seen that the main plan is a group of connected buildings around a court. The main two-story building in front, the cooking and sewing departments in the rear, the commercial department at one end and an arcade at the other, with the science departments, manual training and drawing, and the auditorium as projecting buildings at three of the corners of the group. This sort of an arrangement lends itself readily to expansion and the school board has kept constantly in mind the thought that additional buildings may be needed at no very distant date. In the rear of the whole group are the athletic fields, including a grand stand of 500 seating capacity, with lockers and showers for the boys underneath. A girls' gymnasium and a swimming pool formed part of the original plans, but it was found necessary to omit them for the present. The buildings are heated by steam with the plenum system of forced ventilation.

One feature of the building with which we are highly pleased is the built-in book shelves, cabinets, lockers, laboratory tables, etc. They were part of the original contract and were designed and finished to harmonize with the balance of the building. These are more satisfactory than the ordinary types of such furniture to be bought on the market, and it is estimated that from $4,000 to $5,000 was saved in this way. Most of the teachers' desks and some of the other furniture is being made by the pupils of the manual training department.

The Palo Alto Union High School was built under what is known as the segregated contract system, thus eliminating the general contractor. Fifteen different contracts were let and the work was carried out under the direct supervision of the architects. Mr. W. E. Kleinpell was selected by the architects as superintendent of construction. He performed most of the duties usually falling upon the general contractor and was on the job every day—which cannot ever be said of any general contractor—but of course he had nothing to do with the purchase of materials or the hiring of labor. There are several advantages in letting public work by separate contracts.

First: The profit of the general contractor, usually figured as at least ten per cent of the cost of the building, is saved.

Second: The expense of an inspector that it would be necessary for the school board to employ in the case of a general contractor is also saved. This would amount perhaps to two per cent of the cost of the building.

CLOISTER AND AUDITORIUM,

AUDITORIUM AND CLOISTER,
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DETAIL, AUDITORIUM ENTRANCE,
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DETAIL, STATE HIGHWAY ENTRANCE TO ADMINISTRATION BUILDING, PALO ALTO UNION HIGH SCHOOL
ALLISON & ALLISON, ARCHITECTS

As an offset, of course, it is necessary to pay the architect an extra three per cent for superintendence. There would seem to be here at least a clear gain of nine per cent of the total cost.

Third: The superintendent of construction, provided by the architect, is working for the school board and not for the contractor. This, I believe, is a very important consideration.

Fourth: Under separate contracts each contractor gets his money directly from the school board and he knows that if his work is performed according to plans and specifications the money will be forthcoming. Under the general contractor there is always the possibility of failure of that individual and consequent loss of money to the sub-contractor. If the plan of separate contracts were more generally adopted the various contractors should be able to bid lower when bidding to the owner than when bidding to the general contractor.

There are few if any objections to the plan except from the viewpoint of the general contractor. It is hardly to be expected that he will give enthusiastic support to any plan which tends to put him out of business. Two general contractors bid on some of the contracts for this school and each obtained one or more contracts. One of these contractors was rather outspoken in his objections to the plan of separate contracts, but his chief objection was that his work was held up once or twice by the failure of other contractors to keep up with him. This was true, but it should be remembered that we were building in war times. Labor was scarce, transportation uncertain and government restrictions made it almost impossible to get some materials. In spite of these conditions the buildings were completed in a year and we took possession several weeks before we had expected to when the work was started.

The school board feels highly pleased with the system of separate contracts. The materials in the building are exactly what the specifications call for and the workmanship is of the very best. Most of the contractors made every effort to co-operate with the superintendent and to expedite the work. And during the whole progress of the work we had a sense of security which I do not think we would have had under the old system. After satisfying ourselves that the superintendent was competent we felt that a big load had been lifted from our shoulders, because we knew that the superintendent was working in the interests of the school board and not in the interests of some other party. The architect estimates that we saved at least $20,000 by the system of separate contracts—or, in other words, we got $20,000 more of buildings than we would otherwise have gotten.

In closing this article I wish to say a few words about the method of choosing an architect for school work. Two methods have been in use. One method is to call for competitive sets of plans and to select that set which seems best. The other method is simply to select your architect as the first step in the process. This latter method is the one usually employed in private business and it is difficult to see why any other method should be used in public business. The chief objection to the competitive plan method is that it involves an economic waste without accomplishing any useful purpose. If the school board pays for all the plans submitted they are using school money in a way which is decidedly questionable, and if they pay for only the successful set then the unsuccessful architects must stand the expense—and look to other fields to reimburse themselves. There is a dead loss in either case. Many of the best architects now refuse to participate in competitive plan propositions.

How, then, shall an architect for the school be chosen? The only way, of course, is to thoroughly investigate the qualifications of each architect

whose services are available, to inspect schools built by each, if possible, and then to reach a choice from a thorough study of all the data obtained. This process may take many weeks, but I believe the result will justify the effort.

When the Palo Alto Union High School Board decided to build a new school, about fifteen architects offered their services. The first step taken was to eliminate the names of all those who had not made a special study of school architecture. We believe we were justified in this action by the fact that school architecture has now become a very specialized branch of the general profession of architecture, and involves many special problems which are not met in the design of a business building or a residence. We went further and eliminated all those who had not actually designed and constructed at least one high school so situated that it would be possible for at least some members of the board to inspect the finished structure. This process narrowed our choice to about half a dozen individuals or firms. After a study of the credentials and work of this half dozen a further elimination was made by ballot in which each member of the board made three choices and the three firms receiving the highest number of votes were declared to be the only ones which should be given further consideration.

The next step was to investigate more thoroughly the work of each of these three architects. Schools built by them were visited and thoroughly examined by members of the board, and finally each architect was asked to submit to the board a complete set of plans and specifications of a high school which had been designed and erected.

To the layman all plans may look alike but in reality there may be great differences in them. Some plans are so drawn that the contractor may often be in doubt as to just what is meant and may have to spend a great amount of time finding the particular information he is looking for. It is possible, however, to draw plans in such a way that there can be no question as to what is meant, and to so index them that all details and information may be readily found. Specifications also may be too brief and, therefore, inaccurate, indefinite and insufficient. On the other hand ,specifications may be too long, profuse, wordy and, therefore, also indefinite and unsatisfactory.

Some of the members of our board had had experience in building and possessed some knowledge of problems of design, construction and engineering, and to them all plans were not alike. We deemed it wise, however, to go outside the board and seek expert advice. A committee of three, composed of two contractors and an engineer, were asked to study the three sets of plans and specifications in detail and to report the result of their investigations to the board.

Finally, after all data had been gathered and studied, a "score sheet" was constructed by each member of the board for each of the three architects and a final decision was reached. As items on this score sheet the following may be mentioned: Training, practical experience, artistic ability, study of school problems, employment of experts by the architect (electrical engineers, heating and ventilating engineers, etc.), co-operation with board, co-operation with contractors, availability, personality, integrity, reputation, utility of design, economy of construction, perfection of plans and specifications.

I believe the above is a scientific method of solving the problem of selecting an architect for school work. It takes time and means study and work for the members of the board and many midnight sessions, but if it results in giving the community a substantial, artistic and well-arranged school, will not the members of the board feel fully repaid for all their work and worry?

The Structural Engineer and Contractor as Rivals of the Architect

MR. WILFRED E. BEACH, in an article in the Architectural Record, brings out some interesting points on the present and future status of the architect in his relations with the structural engineer and general contractor. Extracts from the article follow.

"Architects of present day practice have become so accustomed to the general contractor and his apparent necessity that they are likely to overlook the fact of his so-recent evolution. Witness that portion of the American Institute definition of an architect, which describes one of his functions of 'supervising the operations of contractors' instead of 'supervising construction.' And some architects, much to their discomfiture, have been made to realize that, in bringing forth this individual for the purpose of shouldering some of the onerous duties incidental to actual construction, they have hatched out a veritable cuckoo-bird, which bids fair to oust its foster parents from their perch.

"Architects may ascribe to themselves all the dignity they can throw into their profession, and then add a modicum, without being able to overcome the opprobrium that attaches to the office of the 'gum-shoe' artist, which office, in the mind of the average owner, the architect deliberately assumes when undertaking to superintend a work of construction.

"The triangular relation is the direct outcome of the building up of the contracting system, which, in turn, was the result of commercial conditions of a by-gone generation. Time was, not so very long ago, when commercial probity was a joke; when a buyer had no protection but his own acumen, and when great wealth was its own justification, regardless of the means of accumulation. Under such conditions, neither reinforced concrete nor heaviest armor plate were barriers too strong behind which to safeguard the interests of the most wary individual when he found it necessary to enter into a building agreement with a rapacious contractor. Small wonder either that, under such conditions, the detective hireling sometimes went wrong. With the owner trying to beat the contractor full as often as the reverse, the architect must have been a superior personage indeed if, after having been forced down to the lowest possible fee for himself, he did not try to recoup when opportunity offered. Evidence might be adduced to show that he did—too often for his own reputation and that of the confreres.

"The writer has in his mail today a printed circular from the manufacturer of a building appliance, containing the following paragraph:

"'The prices shown on page 23 are list—the prices your customer should pay. You are entitled to a trade discount of 10 per cent.'

"And the circular was prepared for distribution among architects, though worded as if for supply houses.

"The general contract system is the simplest one for an architect to handle. With it goes the added employment of the architect as superintendent and the additional fee as well. Without it, the owner is too often convinced that the entire service of the architect can be dispensed with. And there's just the rub; it can.

"Mr. Sturgis, defining 'Contract,' takes occasion to step aside from the limited path of the lexicographer and to remark editorially that 'it is probable that there will be no great improvement in the artistic results of architects' practice until the commission system is done away with. This improvement can hardly be made, however, under the contract system. The two seem to belong together; the architect being recognized in the contract as an essential

third party to that contract, is naturally paid by a percentage on the amount of money represented in the contract.'

"Now, if the architect chooses to be a lofty professional character, an artistic designer only, rather than a complete 'creator of structures,' why then should he not be employed either by the builder or the owner, it matters not which, to be just the designer, the actual working out of the design being left to the contractor or building entity, their excellent draftsman, and their field forces for carrying the work through to completion?

"This is one solution, and many ethical practitioners, as well as other able draftsmen, have been so employed sometimes, furnishing designs only, sometimes more complete working drawings, the engineering and other details being left to the contractor's own forces. In fact, there probably are today more capable structural engineers in the employ of contractors than of architects—a condition largely due to a manifest disposition on the part of many of the best architects to leave their engineering problems to outsiders, specialists in those lines. Perhaps it is this very assumption of high ethical professionalism on the part of the architect which has greatly assisted in giving the general contractor his ascendancy in this age of intensified commercialism.

"Now, some of these, wiser, perhaps, than their brethren, and not quite such sticklers as to ethics, have discovered in the evolution of the drafting rooms of contractors and supply houses a perfectly simple solution of the problem of 'making ends meet.' They argue—and who shall say unjustly—that inasmuch as one of the chief features of the owner's building problem is economy, as is manifest by his refusal to pay a proper fee for architectural service, then why burden him (or the architect) with dual expense for detail drawings? Thus the upbuilding of the contractor's drafting room, as aforesaid.

"It may not be surprising in the near future, if indeed such is not already the case, to find contractors equipped with drafting forces equal, if not superior, to those of some of the architects under whose direction they have been accustomed to work."

*

* *

Method of Oilproofing Concrete

Various Integral and Surface Methods Being Investigated

A SERIES of experiments is being conducted by Messrs. Ludwig Bloch and A. D. Hyman, water-proofing engineers for the Waterproofing & Construction Company, Inc., 50 E. 42nd street, New York, to determine the most advantageous method of making concrete oilproof. The experiments, described in "Engineering World," are a continuation of similar experiments performed by Mr. Bloch for the Fougner Concrete Shipbuilding Company, of Christiania, Norway, and of New York, builders of concrete ships to be used as oil carrying tankers. It is said that the results from some of the experiments have had considerable influence on the methods adopted to oilproof the concrete ships that are being constructed.

The experiments are being conducted on cement-sand mortar proportioned about one part cement to two parts—by volume—of natural sand. A course aggregate was not chosen because it is not generally used in ship construction. Gasoline and 30 to 35 degrees Baume fuel oil, contributed by the Standard Oil Company, are being used in the tests. The mortar specimens consist of two by three and one-half-inch cylindrical disks and one by two by four-inch parallelopipedons.

Two general kinds of experiments have been adopted. One consists of subjecting one side of flat specimens to oil under pressure; the other consists

of immersing specimens in oil under pressure. The former is intended to determine the ability of the specimens to resist seepage, whereas, the latter is intended to determine the ability of the specimens to resist absorption. The disks are employed in the seepage tests and the rectangular specimens in the absorption tests.

Various kinds of oil-proofing are being investigated. The material includes that which is mixed with the mortar as an integral component and that which is applied to the surface of the specimen as a plaster coat or as a brush coat. Material which is mixed with the cement and sand is usually of an inorganic nature. The material in the plaster and brush coats, however, is varied. It includes special cements, oxides and other chemical compounds, paints of various kinds, varnishes and shellac. The plaster and brush coats are applied to that side of the specimen which is to be in contact with the oil.

The apparatus employed consists of vertical risers of one-eighth-inch iron pipe, at the tops of which is a glass gauge about two feet long, and at the bottom of which is a container for the specimens. The length of each riser is about 24 feet. When the specimen is in the container, oil is poured in the top of the pipe until the meniscus rises to a mark on the glass gauge. The amount of seepage or of absorption is determined by observing the glass gauge. Beakers are placed under the specimens tested for the seepage for the purpose of collecting any oil that may pass through them.

A feature of the experiments is the method employed to obtain a tight joint around the disks tested for seepage. Only those who have had experience with permeability tests of concrete appreciate the difficulty of obtaining a perfectly tight joint. Some experience is required in fastening the specimen in the apparatus if leakage is to be prevented. It has been observed that the number of leaky joints has diminished as experience in constructing the joint has increased.

To fasten the specimen in the cylindrical container, the top of the container is removed and the specimen is inserted. A rope of oakum is wound around the specimen and tamped solidly into the recess between the specimen and the container. Then the rope of lead wood is wound about the specimen and the lead is tamped thoroughly with a hammer and a caulking iron. The oakum and the lead wool are wound several times around the specimen to prevent the occurrence of vertical joints. Too vigorous tamping is likely to destroy the specimen. An experienced person, however, rarely destroys a specimen by tamping.

The containers have been made, generally, of galvanized iron of various weights. However, experience has shown that the containers made from heavier iron—about No. 20 gauge—are more economical than those made from the lighter iron. The reason for this economy is that the heavier containers can be used over and over again, many times, whereas the lighter containers can be used only two or three times. The necessary tamping of the lead wool causes a container to bulge and soon destroys the lighter one. What is more important than economy of container, however, is a tight joint around the specimen. This tight joint can be obtained by careful tamping.

Containers to hold the specimens consist of cylindrical drums of one cubic foot capacity. Several one by two by four-inch specimens are inserted in the drum, after which it is closed, and oil poured into the riser until the surface of the oil lift to the graduation on the glass gauge. To remove included air bubbles, the container is shaken gently and then allowed to stand during various intervals. Any absorption by the mortar specimens is indicated by the subsidence of the meniscus in the glass gauge.

More Constructive Criticism

By F. W. FITZPATRICK

SOME call me a scold. Perhaps I am. My business carries me many places and I see many conditions, as well as the results of those conditions, that the regular practitioner wots not of. It may, therefore, be helpful to him to lay these observations before him. It may not sound that way, but carping criticism, or mere faultfinding, is not in my line. Constructive criticism, not "reform," for I hate the word, but just plain helpfulness is my sincere purpose, however short of the mark my efforts may fall.

It seems to me that, all summed up, everything considered, service should be the slogan, the watchword and the battle cry of the architect, and efficiency his aim in rendering the highest quality of that service. He is not manufacturing a certain grade of goods that the public can buy or leave alone: rather is he creating something special in every case that should be pre-eminently suitable to the particular purpose or wants of the client.

How thoroughly does the average architect do this?

All too often he deems the client merely a necessary evil, a nuisance; his lofty ambition is to erect beautiful buildings, monumental exteriors to his own skill in copying the work of masters of past times and conditions. He brings neither the experience with the varied problems of business or other specialized buildings, nor the earnest study these would justify, to bear upon the solution of the problem in hand.

He worships to fervently at the shrine of the Front. The plan, the client's greatest wants, the prime purpose of the building, the cost, the revenue, all must be beaten into shape or sacrifice to fit some wondrous exterior copied from great antiquity.

Strange what a fascination the past has for us. The old boys of æons ago, other times and climes, built beautifully and appropriately to their times and climes. Their temples and tombs were refined, graceful, marvels of "frozen music," as Architecture has been most aptly termed. Sometimes it took centuries to build those structures. Time counted for little. The world was leisurely romantic and offered much incense to the Arts. But tell me, what sense is there in attempting to beat our intensely practical, rushed, modern and climatic requirements, every blessed one of them, into the external shape of some tomb or temple of B. C. times? Frankly, loving the classic as I do, enraptured as I am over it in its natural surrounding sand settings, I've gotten so that, as beautiful and perfect as you can make a classic design, I am soured on it, tired and weary and sick at seeing modern office buildings, churches, schools, theatres, warehouses, residences, stables and dog kennels all a la Baths of Diocletian or Temples of Diana. Why not be consistent and clothe the ticket seller at your classical railway stations and the elevator boys at your temple-like office buildings in Roman togas, fillets, and sandals?

Granted that the wondrous buildings of the Chicago World's Fair and some of our great governmental structures gracefully fill and fit the classic garb borrowed from antiquity, still it at least shows most appalling paucity of expression that we should continue to follow that style right along and force it to do duty for our every need.

We go at Architecture from the wrong angle, and the results are a bit heart-breaking. Grave errors and bungles are common in every profession and trade, for human nature is indeed most fallible, but it seems to be that in no profession are errors so common as in ours, unless it be in the medical one, and there they can at least bury their mistakes

out of sight. No other profession involves so much detail, the blending of so many lines, the keeping together, the harmonizing of so many different forms of human endeavor, but all that presupposes the greater skill and more earnest preparation for all calling, yet as a matter of fact and exacting as are our duties, no profession is easier to butt into than is Architecture. And there is so little check upon those errors until it is too late to mend them. Plans are something of a mystery to the average client. He sees a drawing showing a lot of rooms opening into a light-court, the latter is labeled "light," therefore he surmises that "light" really means light. Only when the building is completed does he realize that three feet of space between two buildings ten stories high doesn't really mean bona fide light. The architect should know it, but he wants light there, and fondly deludes himself that marking it on the plans will produce it in reality.

So with the costs. A man has $10,000 to spend on a building and for that $10,000 he'd like to get $20,000 of building. The architect aids and abets the illusion. He really hopes to produce the miraculous and he's afraid that if he doesn't promise the client the earth with a chunk of moon thrown in, his client will go elsewhere. The miracle is never performed. To get anywhere nearly what he wants, Mr. Owner will spend $30,000 perhaps where his architect talked $10,000. The profession gets cussed accordingly. I submit the architects should know the real cost of construction and should tell his client the whole truth.

So few prospective builders really understand a plan when they see it that it is not reasonable to expect an owner to know whether those plans truly supply their needs, whether they conform to the building code or not, whether the building will receive a high or low rate of insurance, whether it will really be fireproof or not, whether the construction is regular or expensively special, whether the light will be good or poor; all these things are left confidingly to the architect. Sometimes he manages to take good care of them, and other times he falls down miserably in one and often in a dozen particulars.

It is conceded that not one architect in a hundred really appreciates the importance of fireproof construction or knows all about its very simple essentials. At least the facts are that in this entire country, with something like 20,000,000 buildings in it, there are but forty really fireproof buildings and certainly not over 8,000 fairly fire-resisting ones.

The profession's sins of commission and omission are indeed many and costly. Ornament is applied and where it adds nothing to the appearance of the building, just increased cost, waste; materials excessively strong in one place and barely adequate in another; so many rooms crowded in that the light space is insufficient for the entire building, resulting in large unrentable areas; arrangement sacrificed to external appearance; I have dozens of cases in mind where one or two rooms to every story in a tall building have been sacrificed, utterly spoiled, in order to get in some fool column or arch on the the sacred "front." Everything is subservient to that "front;" and there's the inadequately heated building and the overheated building, the leaky roof, the damp walls, the undrained cellar. And the sins of omissions; forgotten details, the hastily written or form-specification, made to do duty for every class of building, the inaccurate plans, the extras, the fusses with the buildings, the loss of time, rent and interest.

The architect should be artist and business man combined. His is not the function of merely interpreting a dream, as does a sculptor or painter, giving tangible expression to his thoughts and selling the product to whom-

soever has the price; he does not build fantasies, buildings, and then place them upon the market. His function is infinitely more specific, more real, more commercial, if you will. The purpose of a building is decided upon before he is called in, it is very definite, it rarely is purely monumental, and almost invariably a building is planned to produce revenue, or to house some special function in life, a home, a house of worship, whose occupants have especial needs or notions and limitations that must be served. His is the task of putting those ideas into reality, of producing that revenue, of making convenient and easy of operation that factory or school. Advantage must be taken of the site already selected or owned, consideration must be given to the surroundings; a perfect structure, with all its complexity of details and specialties, must be produced, and the whole must be kept within a limit of cost that has been prophesied, anticipated by the architect. On top of all that, if he be a true architect, he will make that building beautiful, whatever its purpose, whatever its cost, however humble it may be. And such a task elevates his work into the most ideal, the noblest, the grandest, the finest of the Fine Arts, and, without exception, the greatest and most complex of all the sciences, for it must take into account and actually comprehend at least the rudiments or some of the details of them all.

Sad to relate, however, distressingly few practitioners in our profession look at it that way, who seem ever to invert the process; they mistakenly put what they deem the "art" before the essentials, looking upon the latter as irksome, burdensome restrictions the owners of property cruelly put upon their great talent. To such an extent indeed that seven out of ten of them will begin the solution of a problem by blocking out a sketch of a beautiful exterior, a fine colonnade, an artistically balanced lot of "voids and solids," and then do their blamedest to beat the interior requirements into a shape that will fit that exterior.

All this may sound like a plaint, a bit of captious criticism, just fussing with the architects. I've told you before that I believed in constructive criticism; I show the sore simply that it may demonstrate the need of a salve or cure, and this paper, instead of being merely critical, is a most earnest and prayerful exhortation to the architects to devise and supply a cure, but it will have to be a mighty one, for it must be calculated to save the profession. In every large city one sees what is becoming of the architect. He is becoming the hired man of the big construction companies.

Many things are to blame for all this, some troubles within the profession and some outside. Among the latter is that the public is not discriminating in selecting an architect. Here is an example; it's a silly performance, but not at all out of the ordinary: A lady in Washington is going to build quite a mansion and has selected her architect. The man has done fairly good commercial work, but he never did a decent house in his life. Curiosity was eating me up and I asked her how she had made the selection. Her naive reply was that, not knowing any of them and getting such varied advice from her friends, she just took the directory and picked out a name that sounded artistic and clever, and the fellow certainly has a flossy, artistic hyphenated cognomen—albeit he didn't happen to pan out according to his ma's specification.

Some internal troubles are directly attributed to the schools. It sounds paradoxical and it is so, but they, the schools, are too severely academic. They give the wrong angle to the whole subject of architecture. The youngster is allowed to dally with castles and grand operas and just the fluff of architecture, and from the very first is impressed with the idea that Art is the Front, and that the proper way of putting up a good front is

to make as nearly a copy as one can of something else done for an entirely different purpose two or three thousand years ago.

Modern construction is looked upon as the province of the engineer. Modern, commercial, educational, manufacturing and religious conditions are bugbears to be tolerated but not loved and, in fine, the youngster is treated as a mere purveyor of pretty frills for a building, while his real task is far ahead and above that. He should be a creator, an artist if you wish, but also he must be intensely practical.

How many of us live up to that specification? All who feel that they are fully up to the standard may raise their right hands. Thank you, the ayes have it!

Aim by study and tireless effort to give your clients superior service, keep harping away at efficiency, be artistic but also be practical. True Art in our line is to do all things well and to clothe perfectly articulated, muscled and fleshed skeletons in raiment that is suitable of today, and beautiful because it clearly expresses the purpose, the mode of life and character of the created thing. Take a larger part in public affairs, don't let the lawyers do it all; your training and your work fit you better than they are fitted to handle public improvements and the city's welfare.

Go after business legitimately and boldly. First prepare yourself to do your work well; do it so well that it speaks for itself and is your best recommendation and then tell people about it in a businesslike manner. The rules of the Institute are no longer against advertising. After you've done some good work, tell people about it, advertise it in a straightforward, direct way that will challenge and make appeal to a direct business man.

I have an architect in mind in an Eastern city who never lacks good and profitable work. When he hears of a building project he sends an ad to the man—a letter, telling him what his rates are, what he has done, gives his bank and other references, solicits his business, and encloses a list of eighty-six buildings, important ones, too, eighty of which have been completed at within three per cent, one way or the other, of his estimates and with brief notes from the owners saying so. That's an infinitely more manly and businesslike proceeding and a far stronger appeal to a business man than a procession of sisters-in-law, reverend and masonic friends coming in to tell one how pleased they would be to have the job given to So-and-So because he is such a nice man!

* * *

Reconstruction of France to Cost Eight Billion

The reconstruction of France will cost eight billion dollars and it will require one hundred years to finish the job, according to a French engineer, Mr. Louis Chevillion, who as a member of a French commission, has prepared data for the work of reconstruction. The average Frenchman who will go back to his own home does not care to live in a temporary dwelling. He would prefer to dig a hole in the ground on his own farm, and live in that fashion until he can put up a permanent house. The top soil in vast areas has been ruined to a depth of 18 feet by shells and is utterly useless, according to Mr. Chevillion. "The only thing the French can do with it is to plant pine trees and wait a hundred years."

* * *

As Promised

"That builder said he would build us a cracking good six-room stucco house for eighteen hundred dollars."

"Well, did he?"

"Yes, it's cracking good already."—Building Age.

How a Former San Francisco Architect Created a New Profession — Farmstead Engineering

WHEN Mr. Houghton Sawyer practiced architecture in San Francisco, with offices in the Shreve building, he employed Mr. Max E. Cook as his secretary and specification writer. Mr. Cook made many friends, but none of them was able to offer him a job when, on account of the war, Mr. Sawyer closed his office, and Mr. Cook was obliged to look elsewhere for employment. For a while Mr. Cook interested himself in architectural work in Oakland. Not satisfied with the outlook, he decided that it was up to somebody to assist, or rather advise, the State in its Land Settlement work at Durham. Mr. Cook had some very good ideas about farmstead engineering, and how well he succeeded in getting them introduced is told in the following news article which appeared in the San Francisco Examiner of February 9:

He calls himself a "farmstead engineer." No dictionary gives a definition of "farmstead engineer" or of "farmstead engineering." It is something wholly new.

To have created an original line of human endeavor, to have given it a characteristic and highly descriptive name, and to be the only one engineer of the kind in the United States, are the achievements of Mr. Max E. Cook, now at the State Land Settlement at Durham.

Mr. Cook is an architect and was associated with Mr. Houghton Sawyer. He is about 30 years of age and is so situated that he could experiment, after he conceived the idea of "farmstead engineering." He had his part in creating the big Morsehead apartments up on California street and other works that Mr. Houghton Sawyer has given to San Francisco.

He became "farmstead engineer" on California's big land settlement project only by agreeing to become the office boy. Possessed of his idea he applied to Superintendent George C. Kreutzer for a place with the settlement.

"No chance," said Mr. Kreutzer. "The only employees here aside from myself will be a stenographer and an office boy."

"I'll be the stenographer," replied Mr. Cook.

"Position is filled," declared Mr. Kreutzer.

"Then I'll be the office boy," Mr. Cook came back with a smash. And office boy he was until he demonstrated that "farmstead engineering" had come to stay. The farmers get his services without cost.

Here is Mr. Cook's own story of "farmstead engineering:"

"While with Mr. Sawyer, I had something to do with the building of houses and bungalows on the Chowchilla ranch, which was broken into small tracts and sold some years ago. There the needs of the farmer, both in locating and building his home and other buildings and in laying out his property, appealed to me.

"Particularly the needs of the women-folk of the farm household have their own problems. Arrangement of the house, for the woman must work in it all the time, is something vital. Then the average farmer has not studied the location of his house and buildings, and in this study come considerations such as soil, drainage, the relation of one building to another so as to lighten labor and save steps, the position of trees and other windbreaks and the position of the homes of the neighbors. Even the question of neighbors is of importance, because neighbors must be neither too close nor too far away.

"I wrote to every agricultural experiment station, to every agricultural college in the United States and to the Department of Agriculture at Washington for information on these questions. They had nothing—absolutely not more than something like four pages of reading matter, collectively, from the entire list of agricultural publications.

"Then I made up my mind to get into this Durham Settlement and show what can be done. I did come here under the title of office boy and at times I have done messenger work, just to get the chance.

"I found the Settlement authorities desirous of adopting a lot of standard plans for houses. That was a mistake and I think I convinced them of it. Women do not want standard house plans any more than the city woman wants standard clothing. We have to put up mighty reasonably priced houses on this Settlement, but even with reasonably priced houses, some variations can be made. The woman who lives in the house ought to have as much margin as possible in which to have her wants satisfied.

"Location of houses and arrangements of buildings is a study by itself."

Mr. Cook laughs quietly at the title "farmstead engineer."

"Tell you why I did it," he said. "I did not want to use the word 'architect' because the average farmer thinks that an architect is distinctly a city fellow. And what do city fellows know about farms and farming?"

U. C. THEATRE BUILDING AND
DETAIL OF ENTRANCE, BERKELEY
JAMES W. PLACHEK, ARCHITECT

Buildings in Berkeley Designed by James W. Plachek, Architect

By WELLS DRURY, Secretary Berkeley Chamber of Commerce

JOINING utility and architectural beauty with wise economy, Mr. James W. Plachek, architect of Berkeley, California, has, during the past year, created a number of buildings that will stand the test of the severest criticism.

Among those that may be particularly mentioned are the U. C. Theatre on University avenue, near Milvia street, the Hotel Central on Shattuck avenue, the John Muir School at Claremont and Russell streets, the R. W. Hawley log cabin in Thousand Oaks (built of the natural timbers which formed the pergolas of the Oregon building at the Panama-Pacific International Exposition), the North Congregational Church at Cedar and Walnut streets, the Burkhalter Apartments at Dana and Woolsey streets, the T. J. Donahue residence in the Uplands, Sill's grocery store at University and Walnut street, and numerous other structures.

A distinct achievement is recorded in the Sill grocery store, which was designed specially for the use to which it is devoted. A dominant feature is the daylight effect created by large skylights and wide windows. The result is most satisfactory both from the standpoint of illumination and the standpoint of sanitation, since every part of the large market or selling room is sweetened and kept clean by the clear sunlight. The rear of the first floor is given over to the delivery clerks, who, under equally favorable lighting conditions, handle the supplies that are dealt in by the company.

"The Berkeley Bungalow Church" is the name appropriately applied to the North Congregational church, designed by Mr. Plachek and which has been extensively copied by other churches in the State. The structure attracts attention because of its symmetry and the simplicity of its surroundings. With its graceful pergola and entrance, the edifice presents a restful home-like appearance that is at once appealing both to the passer-by and the church attendant. The rigid churchly atmosphere generally prevalent in the more formal structures is noticeably absent.

Mr. Plachek's most important building in size and cost is the U. C. Theatre. Besides the auditorium, the building contains a number of stores and offices. The theatre proper is 150 by 91 feet, with posts and pillars conspicuous by their absence. The auditorium comfortably seats 2000 persons. There is no gallery.

The Hawley log cabin in Berkeley's picturesque suburb, Thousand Oaks, recalls memories of the pioneer days of the West, when human habitations were constructed from the rude materials of the primeval forest. Amid surroundings that bring to mind the days of original settlement of the country, a veritable *rus in urbis,* Mr. Plachek has set this gem of modern comfort. So well does it com-

SKETCH FOR SCHOOL BUILDING

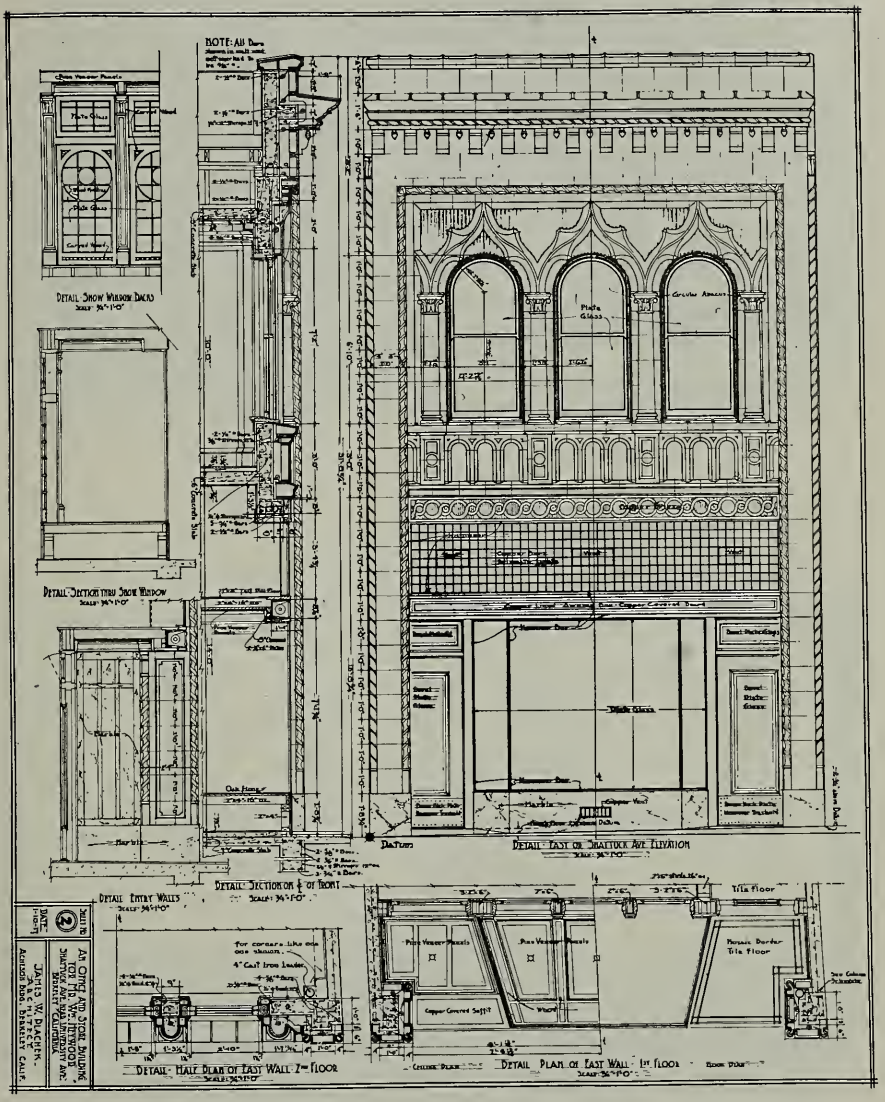
FOYER, U. C. THEATRE, BERKELEY
James W. Plachek, Architect

LOBBY, U. C. THEATRE, BERKELEY
James W. Plachek, Architect

STORE BUILDING FOR THE S. J. SILL COMPANY, BERKELEY
James W. Plachek, Architect

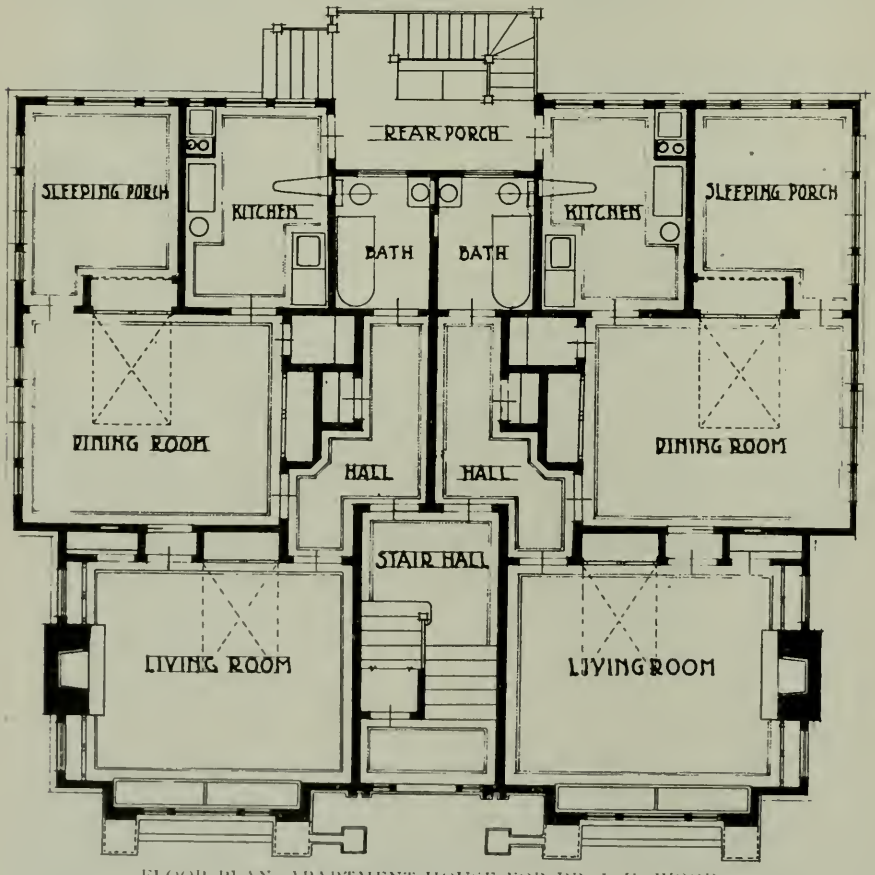
HOTEL CENTRAL BUILDING (CENTER), BERKELEY
James W. Plachek, Architect

BUILDING FOR FORMER MAYOR
W. H. HEYWOOD, BERKELEY
JAMES W. PLACHEK, ARCHITECT



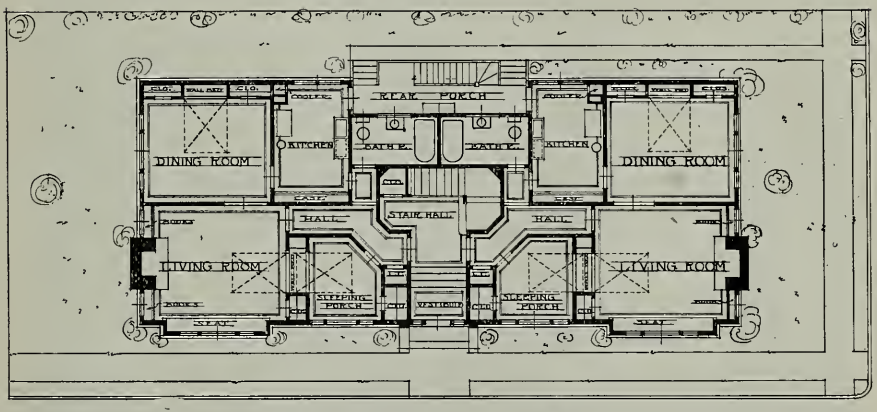
WORKING PLAN ELEVATION, BUILDING FOR MR. WILLIAM H. HEYWOOD, BERKELEY
JAMES W. PLACHEK, ARCHITECT

APARTMENT BUILDING FOR DR. J. H. WOOD, BERKELEY
James W. Plachek, Architect



FLOOR PLAN, APARTMENT HOUSE FOR DR. J. H. WOOD
James W. Plachek, Architect

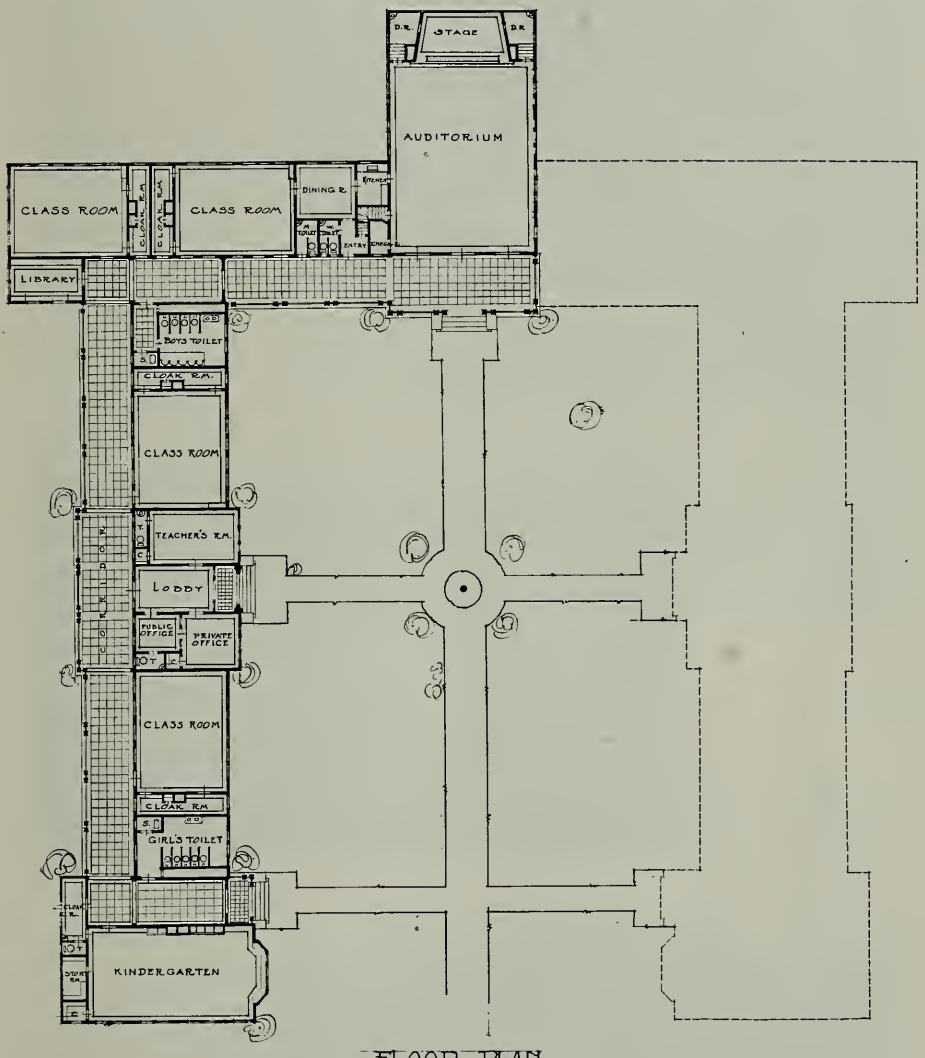
APARTMENT HOUSE FOR MR. C. M. BURKHALTER, BERKELEY
James W. Plachek, Architect



TYPICAL PLAN, APARTMENT HOUSE FOR MR. C. M. BURKHALTER, BERKELEY

ENTRANCE DETAIL, APARTMENT HOUSE FOR MR. C. M. BURKHALTER
James W. Plachek, Architect

JOHN MUIR SCHOOL GROUP,
BERKELEY, CALIFORNIA
JAMES W. PLACHEK, ARCHITECT



FLOOR PLAN

FLOOR PLAN, JOHN MUIR SCHOOL BUILDING, BERKELEY
JAMES W. PLACHEK, ARCHITECT
W. H. RATCLIFF, JR., SUPERVISING ARCHITECT

DETAIL.
JOHN MUIR SCHOOL,
BERKELEY.
JAMES W. PLACHEK,
ARCHITECT.

JOHN MUIR SCHOOL,
BERKELEY.

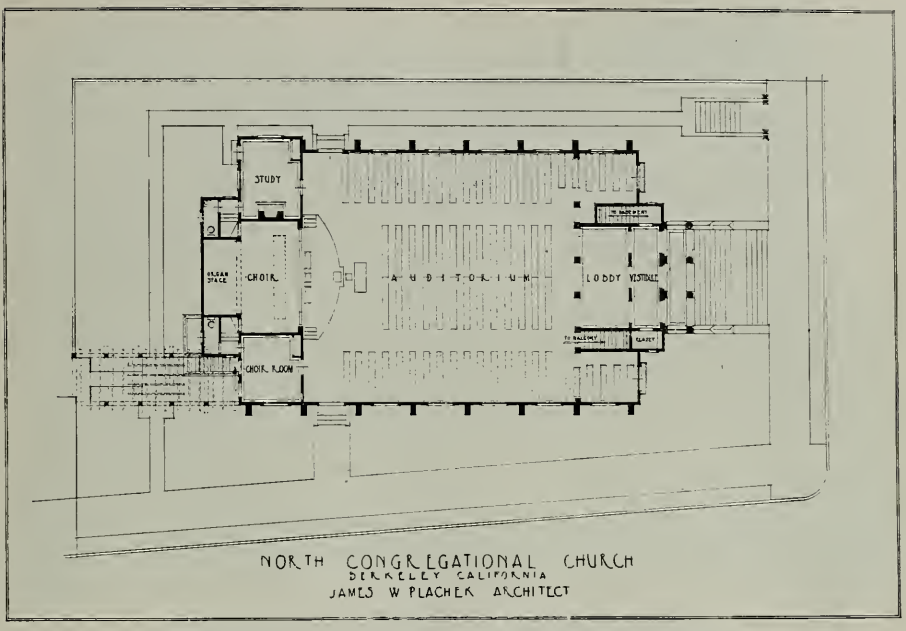
KINDERGARTEN BAY,
JOHN MUIR SCHOOL,
BERKELEY.

CORRIDOR, JOHN MUIR SCHOOL, BERKELEY
James W. Plachek, Architect W. H. Ratcliff, Jr., Supervising Architect

PROPOSED APARTMENT HOUSE, UNIVERSITY AVENUE AND MILVIA STREET, BERKELEY
James W. Plachek, Architect

NORTH CONGREGATIONAL CHURCH (FAMILIARLY CALLED THE BUNGALOW CHURCH), BERKELEY
James W. Plachek, Architect

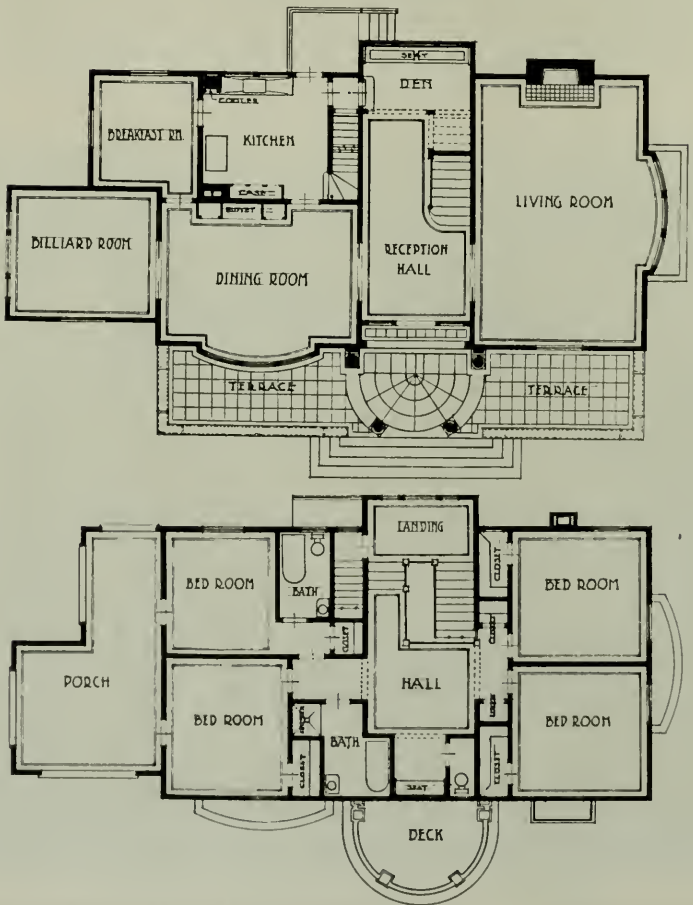
INTERIOR, NORTH CONGREGATIONAL CHURCH, BERKELEY
James W. Plachek, Architect



PLAN, NORTH CONGREGATIONAL CHURCH, BERKELEY
James W. Plachek, Architect

RESIDENCE OF MRS. SARA KELLAR, BERKELEY
James W. Plachek, Architect

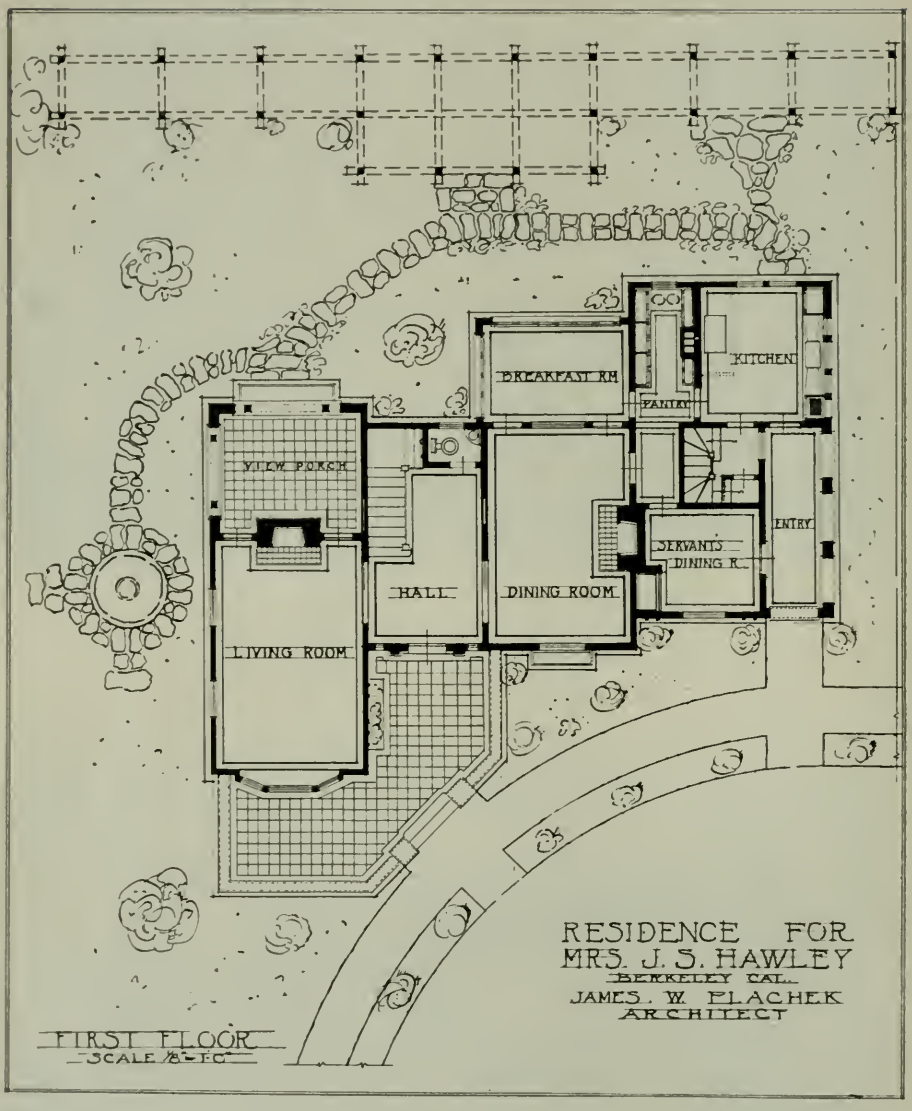
RESIDENCE OF MR. J. T. DONAHUE, CLAREMONT
James W. Plachek, Architect



FIRST AND SECOND FLOOR PLANS, RESIDENCE OF MR. J. T. DONAHUE, CLAREMONT

RESIDENCE OF MR. J. BAUME, BERKELEY
James W. Plachek, Architect

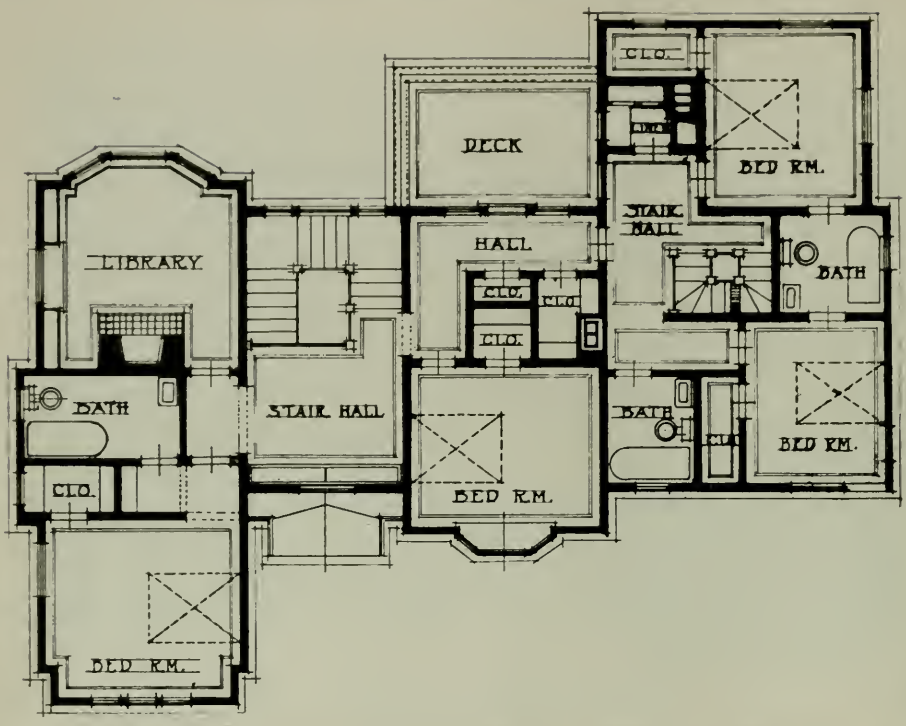
RESIDENCE OF MR. LESLIE D. ROBINSON, BERKELEY
James W. Plachek, Architect



GROUND AND FIRST FLOOR PLAN,
RESIDENCE OF MRS. J. S. HAWLEY
JAMES W. PLACHEK, ARCHITECT

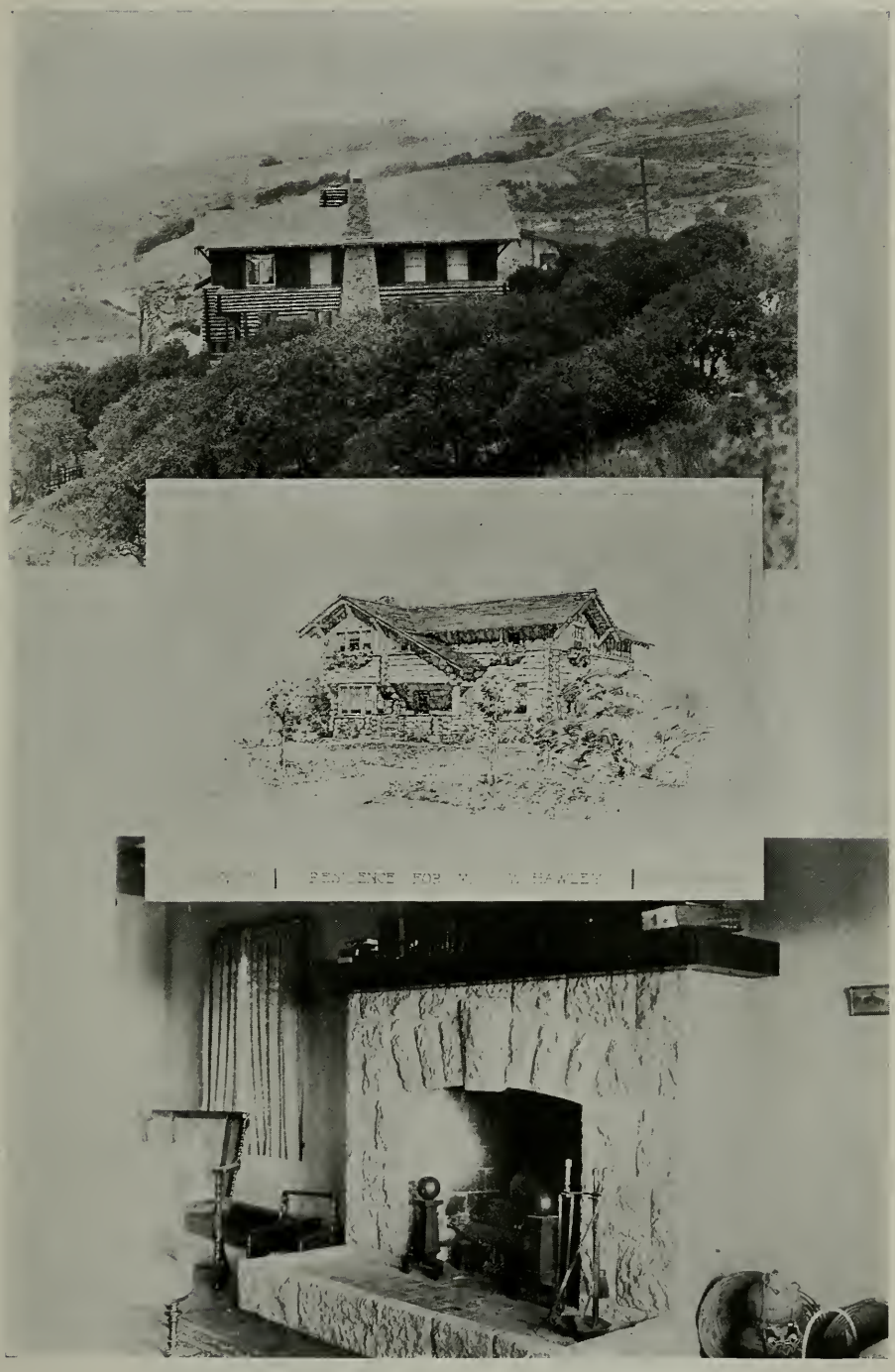
SKETCH, RESIDENCE FOR MRS. J. S. HAWLEY, BERKELEY
James W. Plachek, Architect

RESIDENCE FOR MRS. J. S. HAWLEY, BERKELEY
James W. Plachek, Architect



SECOND FLOOR PLAN, RESIDENCE OF MRS. J. S. HAWLEY, BERKELEY

INTERIOR, RESIDENCE OF MRS. J. S. HAWLEY, BERKELEY
James W. Plachek, Architect



RESIDENCE FOR MR. R. W. HAWLEY
THOUSAND OAKS, CALIFORNIA
JAMES W. PLACHEK, ARCHITECT

MR. PLACHEK'S COUNTRY HOUSE IN MARIN COUNTY

port with the landscape that the building seems to be part of the natural scene, and one would be surprised not to find it there.

In the Heywood office and store building on Shattuck avenue, the architect has achieved something really worth while in polychrome terra cotta. The facade of this small but attractive structure is of white glazed terra cotta, with polychrome ornamentation, the only building of its kind in Berkeley. It is used as an office building by Mr. W. H. Heywood, the owner, and Mr. Plachek. The ground floor is occupied as a retail store.

The John Muir school in Claremont is a truly delightful building and a model of what a school should be for small children. The John Muir school is built in the English half-timber style and offers every suggestion of home-like simplicity. The usual forbidding appearance of most of our schools is here changed into a welcoming hospitality—a feeling that ought always to predominate in a lower grade school. When the scheme is completed the building will be in the form of a U, the present auditorium being in the center.

These are but a few of the buildings planned and constructed under the direction of Mr. Plachek in the city of Berkeley for a period of less than four years.

Government Will Help to Revive Construction

A NEW division of the U. S. Bureau of Labor has been created for the primary purpose of reviving public works construction and private building enterprises. This bureau—the division of public works and construction development—will gather and distribute information that will enable private initiative to make the transition from a war to a peace basis without serious interruption, obviating uncertainty or hesitation for want of the practical data upon which business judgment must depend. The survey will be concerned particularly with data of significance to the construction industry; but the data required for reasoned action in this industry are extremely varied, and the information brought together by the division is expected to be of value to industry in general. The work of the division is a nation-wide search for facts that may be weighed by any community or investor in attempting to determine whether it is sound judgment to construct a particular public work or private building at present. The results of the inquiry will have the widest publicity, and when circumstances unfavorable to construction are discovered efforts may be made to change them, but nothing will be done to stimulate economically unsound enterprises.

The pivotal nature of the building industry in economic reconstruction and the general purpose of the work of this division are expressed in Secretary Wilson's statement:

Building construction will help to provide employment for returning soldiers and for workmen dismissed from war industries. One of the largest sources of prospective employment is the building trade and its allied factory industries.

In the case of private construction, a resumption of activity will also lessen the congestion of population, improve conditions affecting the public health and convert inactive property into active property—which supplies the means that enable communities to support the function of governments.

During the war the nation practically concentrated all its efforts on the production of goods for immediate consumption—war materials, food, clothes. The failure to produce the normal quota of goods for future consumption has made these scarce and high priced, and as they are essential to further production they affect the cost of production and, consequently, the cost of living. Chief among such goods are building and other real estate improvements, including public works, as road bridges, etc. The scarcity of buildings, for example, creates high rents.

An interesting feature of the organization of the division is the manner adopted to insure information of practical value to those who are primarily expected to use it. The general scope of the inquiry is determined by a section, composed of non-paid members who are business men of practical experience. The inquiry itself is directed by a group of economists and special investigators supplied by the Department of Labor and other Government departments or borrowed from universities.

The economists are collecting information concerning the cost and supply of building materials, the amount of labor available and its cost, the values of land, prevailing rents, the supply of capital, the amount of building construction held up by the war, and the demand for building in various parts of the country.

Five other sections will prepare information for publication under the supervision of the economics section and disseminate it through the press, public speakers and posters and by enlisting the co-operation of organized labor.

* * *

Will Prepare New Plans for Merced School

Messrs. Allison & Allison, architects of Los Angeles, have been commissioned to prepare new plans for the Merced Union High School building at Merced, California. Revised plans are needed on account of the selection of an entirely different site from the one chosen when the first drawings were made. The buildings are to cost $130,000.

Proposed Soldiers' Memorial for San Francisco

By LOUIS CHRISTIAN MULLGARDT, F. A. I. A.

IT is natural that our community should display a grateful interest in the erection of a War Memorial in honor to and affection for the men and women who were in the brunt of the recent war; our fullest expression of appreciation shall be extended to them.

These men and women were converted from peaceful citizens into powerful units of a colossal war machine. They assisted so magnificently in the speedy termination of brutal slaughter and destruction. The war was ended at least one year earlier than was predicted by the wisest heads of both continents. They share in the honor of bringing it to a rightful conclusion so speedily.

The greatest sacrifices in times of war are made by those who are crippled for life—those who have lost members of their own family—those who have cripples returned to them from the ghastly war, especially the fathers and mothers of those who fought.

It remains a question as to who the greatest sufferers are. Perhaps they are most frequently the parents of the dead and the crippled. Who knows how often the entire world is the greatest looser, due to some death unrecorded?

All nations have built many monuments in honor of their warriors. Out of the great number and variety there are relatively few monuments which possess genuine merit. Victory is fickle. Justice is too frequently the looser to the Wand of Victory. Many monuments have been conceived to an unjust victory. Their flattery continues to be admired thoughtlessly, and their influence is unconsciously pernicious. Justice alone can direct mankind toward that higher State of Civilization.

Civilized peoples do not indulge in war through choice. They take up arms reluctantly and as a measure of defense only.

Small consideration has been given to the harmful influences which for centuries have been instilled into peoples of the world by fallaciously conceived monuments.

Brute force applied in covetous intent is without justice or merit, and therefore deserves no memorial. All monuments which have been erected in flattery to an unjust victory are but the hollow expressions of a servile people in bondage. Such monuments act as a blight on civilization; they tend to further distort such minds which yet incline to greater faith in the application of brute force instead of justice.

Monuments which have been erected to mere victorious brute force incline man's ambition to create further unjust wars whereby to win the blood-stained laurels which invariably crown victory regardless of cause. If we concede that more than fifty per cent of all mankind inclines toward brutality, then all wars are justifiable. Natural law provides that wild brute life shall vanquish or be vanquished through process of physical force. Why try to distinguish between such animals and peoples who are similarly inclined?

Whatever the incentives were which served as direct causes for previous wars, it is undeniable that we were compelled to engage in this brutal strife in self-defense and because of obligations to civilization. Our aims were altruistic. We entered the war to stop the war. Our men and women fought, bled and, died, to put an end, if possible, to war, forever. These

facts cannot be too strongly expressed in the proposed monument, thereby to give greatest emphasis to the true glory which was presumably achieved.

Our People went into this war primarily to defeat a merciless, arrogant, autocratic foe, whose diabolic war measures were incomparably cruel. Secondly, we went into this war to abolish all war, and thereby establish the Threshold of International Civilization.

Our greatest reasons for wishing to give praise to our men and women veterans who became active units in the recent war are therefore altruistic. They fought for Universal Peace, which shall reign before genuine Civilization takes root.

Whatever the facts are concerning the recent war, they have been more clearly defined pictorially and in script than other similar world tragedies, because of new accomplishments and greater rapidity with which facts are recorded in this age.

These established records of the war are in the last analysis the very embodiment of all that is most worth while to treasure. They will show for all time to come that which has really been accomplished. These records constitute the epitome of achievement. By treasuring them, we do intelligently honor the memory of those who manifestly have won that great glory which only those records can fully convey to all mankind.

It is most important that we should preserve the illustrations and text records of this terrible holocaust, as the only remaining evidence of facts which must be made to live forever. They must be cherished if the horrible sacrifices made for civilization shall be rewarded with final success. These records will clearly show how our young men and women were forced to engage in sacrifice for the good of all mankind and how valiantly they deported themselves. Let us therefore preserve this influence for good as an open book.

Such important records demand ease of access for ourselves and especially for the "Stranger within our gates," they require to be monumentally housed and provided with spacious grounds in a dignified locality.

The memorial should possess five principal elements—a Library of War Records, a Hall of War Illustrations, an Art Gallery of War Paintings, an Assembly Hall for display of War Motion Pictures and for War Lectures. These four departments will give true expression of the unjustifiable horrors of war as the strongest educational influence against their repetition. Nothing could be made more expressive of the utter futility of human conflict in the destruction of life and man's best work than an institution of this kind, nor could anything express more fully and satisfactorily the sacrifices which have been made by those to whom this monument shall serve as a memorial.

It would be an edifice with a Real Soul, and not a solid block of material possessing a mere outward expression. Outward expressions are too frequently misinterpreted, as is true of many things which man creates in marble and bronze.

The fifth element should be an Inner Court, formed within a quadrangular plan. In this garden court an audience may be entertained with orchestral music and other forms of aesthetic entertainments expressive of the higher life.

The structure and surrounding grounds will form a distinct monumental glory to our city. It will have the warmth of the pulsating heart of the Nation which has made the sacrifices of war, because of its great Soul, some records of which are to be found within.

The Practice of Architecture

MANY things give indications of changes in the making. Through conversation, correspondence or reading these signs are constantly recurring testimonies, and a tabulation is unconsciously made of them until the ideas become insistent in their presence. To verify the general impression, a systematic collation of all the evidence is in order.

In arriving at a conclusion by this mental process, it will be found that among the diverse problems demanding attention at this time, one of manifest importance is that of the attitude of the public toward the architect and of the architect in his relations to himself and others.

The practice of architecture is probably today, more than ever before, a matter of barter and trade. The monies invested in building structures demand a return service which represents full value. This value is measured in the adaptability of the structure to its use, its durability and its appearance. These three factors are the fundamentals of correct planning and to render adequate service it appears to be essential that the architect should fully qualify himself to meet these basic requirements, says the American Architect.

An analysis has been made of a great amount of data pertaining to this subject and the majority opinion has been condensed into the following five paragraphs, which embrace the most common of the points developed. This brief consensus of opinion is not intended to cover the multitude of conditions that exist in such relations, but it is thought that possibly it comprises the basic factors.

1. The business of architecture is inseparable from the profession of architecture. Together they comprehend the originating, promoting, designing, planning, directing and controlling the construction of buildings and their appurtenances.

2. To develop a general demand for architectural service—without which only limited opportunities for practice will be presented—the architect must, as an individual and collectively, employ proper and effective means to create a universal appreciation of its intrinsic value.

3. To fully perform his function, the architect must organize, equip and operate his business so as to render complete service in the production of plans and specifications for everything embraced in the construction, equipment and furnishing of buildings.

4. He must furnish complete and detailed supervision of construction and be closely identified with it. He must be responsible financially, as well as morally, for all of his acts, including the correctness of design, the completeness and accuracy of plans, specifications and details, and the construction of the building in accordance therewith; his responsibility to be contingent only on his being accorded freedom in deciding all matters of structural design, mechanical equipment and the selection of materials and workmen.

5. He must control and regulate the business affairs of the building operation so as to safeguard all interests. He must be just and impartial in deciding all controversies within his jurisdiction, but where his own interests are involved he must submit the controversy to arbitration.

A free expression of opinion is invited in the hope that further light may be thrown upon the attitude of the profession toward this important matter.

THREE BEAMS OF EQUAL STRENGTH—STEEL, WOOD AND CONCRETE

Girderless Concrete Floors

By CHARLES CRESSEY, Architect

THE advance of girderless concrete floor construction, in face of doubt, opposition, and downright ridicule, is one of the most striking developments in modern building. Not the least remarkable feature of this type of building construction is its domination by patent rights, which have little resemblance to the actual systems or details in practical use. It is fortunate for the progress of "flat-slab" floors that the control is tolerant and the license nominal, especially after the series of spectacular battles in the United States courts in which the basic principles of the Norcross invention became established, though admittedly inferior in practical detail to later types.

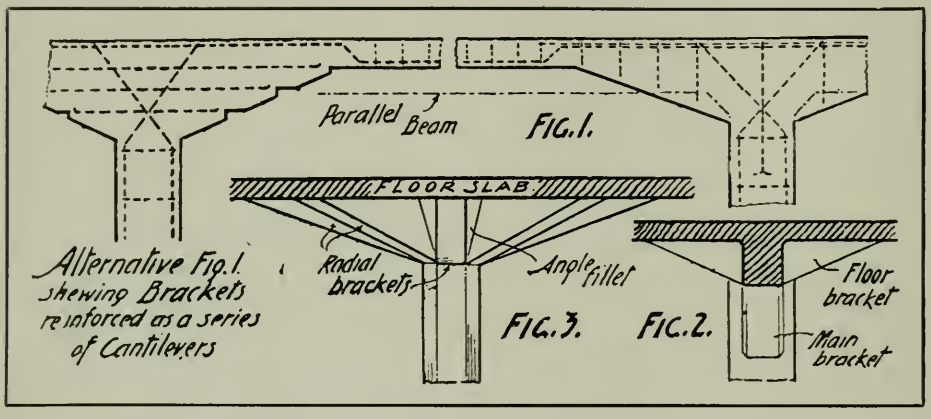
Mr. O. W. Norcross appears to be fully entitled to first honors for foresight and vision in the girderless field, his patent being filed late in 1901 and accepted early in 1902. This invention, as shown by the patent drawing, is crude and elementary, consisting of broad metal belts or plates from column to column, two similar belts as diagonals, and a slab of concrete. The columns are metal, the reinforcement lies in one plane, and the combination generally would probably have remained without crown or reward but for the eminently practical rod systems which followed. Mr. C. A. P. Turner and Mr. F. F. Sinks both received patents in 1911, for four-way and two-way rod systems respectively, Mr. Turner having the prior filing honor in 1907, each having ably demonstrated the success of the types by many important buildings since erected.

A Los Angeles firm of architects exhibited an ingenious quake-resisting system of girderless construction some nine or ten years ago, and a few years later another firm in that city also built one or more buildings with floors carried by radial brackets at each column.

It is a curious instance of parallel thought that men in widely separated parts of the world should be working on broadly similar lines about the same time, and the following article is reproduced from an English journal

nearly ten years old, as a contribution to the history of girderless construction. The well-known patented systems strongly suggest that the reinforcement used is but a new treatment for edge-supported slabs, particularly in the two-way type. In practice, the issue is perhaps of no great moment, but there should be a clear mental distinction between slab panels having four main bearing points, and similar units with but one support, and that placed central in each panel, after the manner of a series of pedestal tables grouped together.

Apart from its interest as a forecast, the article reprinted below, from "The Builder" (London), April 10, 1909, in comparing wood and concrete girder dimensions, carries the thought that structural concrete design is not at its best in imitative forms. In this connection the accompanying photograph, kindly presented to the writer in 1909, by the United States representative at the Forest Service testing station, Seattle Exposition, will bear study. The three beams shown illustrate steel, wood and concrete in comparative dimensions for equal strength.

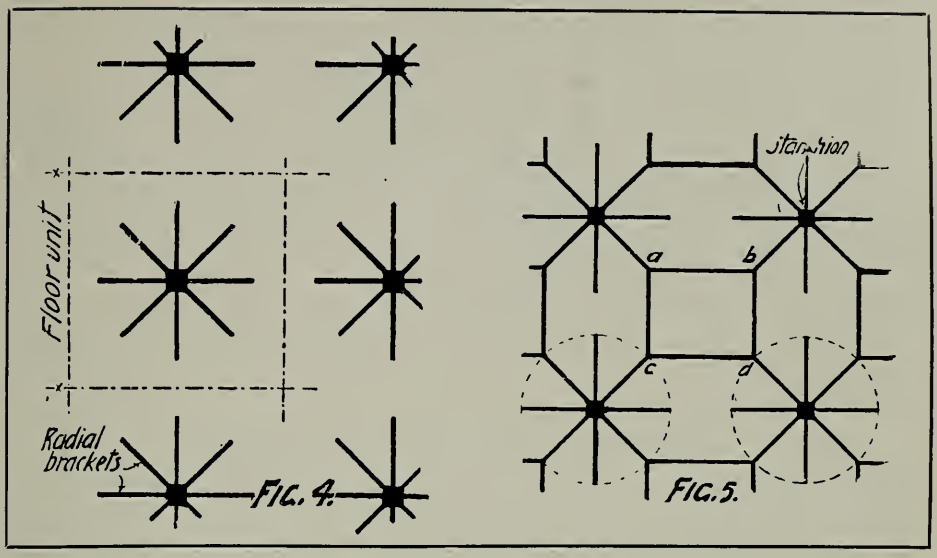


Notes and Suggestions on Concrete-Steel Beams

IN the design of concrete-steel beams today there appears the possibility that history is to some extent undesirably repeating itself. Examination of the older text-books on carpentry suggests an interesting and useful comparison between the elaborate efforts to strengthen timber beams once in vogue and the methods now usual in the reinforcement of concrete beams.

Whatever may have been the theoretical merits of internal trussing for timber beams, it may be said that the practice is obsolete.

I remember a statement, but not the source, to the effect that no practical advantage had been obtained by attempts to truss a wood beam "in its own depth." Certain it is that tensile bracing is now, by common consent, applied below and not within the ordinary depth of timber. There is a suggestive connection between the above and the fact that reinforced beams are by some regarded as excessive in depth. Generally speaking, there is a rapid increase in safety and economy with each slight increase in the depth of a beam, trussed or plain, and it almost seems, from the range of proportionate depths in practice, that designers use the greatest depth of truss for concrete allowable by the particular conditions, and then cloak in the tensile bracing with concrete as a matter of course.



Probably any further serious improvement in the present type of beam may prove impossible, and it may be found that the traditional parallel rectangular form has been too readily adopted for concrete beams. The great attention paid to meeting the tensile weakness of concrete has perhaps obscured the importance and need of attention to its compressive strength, or, rather, the effective disposition of the latter; otherwise some alternative to beams might have been brought forward.

Apparently, under equal conditions and with equal amounts of material, the strongest of two concrete beams would be the one which provided the greatest "effective" compressive area.

As one contribution in the direction indicated I venture to suggest what, for want of a better term, may be described as "bracketed construction."

Fig. 1 shows the bracket principle applied to beam conditions, and the dotted line shows approximately the comparison with the ordinary parallel beam; but the substance of the suggested construction is embodied in the later figures, in which conditions themselves are changed to dispense with ordinary beams entirely. With main beams as drawn, a system of angle brackets to strengthen the floor slab (Fig. 2) would in many cases avoid crossbeams.

Figs. 3 and 4 illustrate part of a floor without beams, support for the floor slabs being provided by cantilever brackets radiating from each column. If every column is regarded as the "center" of one slab unit of the floor, there appears in this arrangement a great proportion of direct compressive area and a marked absence of active tension and side strain. There is also provision against diagonal weakness of the floor slab. A hollow cone might take the place of the brackets, or enclose same.

With larger floor units the arrangement shown by Fig. 5 would provide an alternative, the assumption in this case being that tension in the brackets is largely balanced by the frame a, b, c, d, apart from the natural balance and anchorage of adjoining panels. The short center beams, being subject to end compression, would need reinforcement both top and bottom.

Fig. 6 suggests the need for diagonal support and the suitability of some such arrangement as radiating brackets afford. The figure is based upon the appearance of a slab, tested to failure by a load over its whole area. The directions of the fracture lines shown joining the edges of the slab are not visible on the photograph of the test, and are assumed.

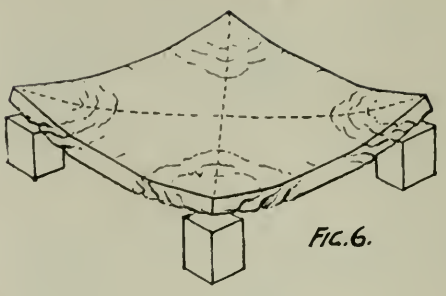


FIG. 6.

Generally, bracketed construction promises a more restful structure than is provided by long-span beam systems, as in the latter the tension members are always active and likely to make the worst of latent weakness.

* * *

Shadows Cast by Skyscrapers

AT NOON, on the shortest day of the year, the shadows of different skyscrapers envelop large areas, states Building Management. The Adams Express building, New York, which is 424 feet high, casts a shadow of 875 feet in length; the Equitable building, which is 493 feet high, one 1,018 feet in length; the Singer Tower, which is 540 feet high, one 1,127 feet in length, and the Woolworth Tower, which is 791 feet high, one 1,635 feet in length.

The effect of skyscrapers casting shadows from a sixth to a third of a mile in length on surrounding property is well illustrated in the case of the Equitable building. Its shadow which, at noon on December 21, is about one-fifth of a mile in length, completely envelopes an area of 7.59 acres. The ground area of the Equitable building is only 1.14 acres.

The shadow cuts off all sunshine from the Broadway facade of the United States Realty building, which is 21 stories high. The New York Title & Mortgage Company building, 14 stories high, and the Washington Life Insurance building, 19 stories high, are both completely shaded. The south side of the Singer Tower is shaded to a height of 27 stories. The nearest part of the City Investing building, 400 feet away, is in shadow for 24 of its 26 stories. Even part of the New York Telephone building, north of Cortlandt street, is shadowed by the Equitable building.

Cedar street, the street immediately north of the Equitable building, has an average width of 34 feet between Broadway and Nassau street. The height of the Equitable building is 14½ times the width of this street. On a north and south street of this width in New York, uniformly improved on both sides with buildings having a height equal to that of the Equitable building, only 0.31 per cent of the windows would receive any direct sunshine at noon on the shortest day in the year. On north and south streets only the windows nearest the top for a distance equal to 1.35 times the width of the street would receive direct sunshine at noon on December 21 at New York (40 degrees North Latitude). The windows in the first 34 stories nearest the ground would receive absolutely no direct sunlight. Direct sunlight would only enter those windows in the four stories nearest the top. Not a single window within 447 feet of the street level would receive a ray of direct sunshine.

The Equitable building is, of course, an extreme case. But even in much lower buildings a considerable number receive absolutely no direct sunshine at the winter solstice. Up to a height equal to 1.35 times the width of such a street all the windows receive some sunshine. If the street, however, is improved with buildings one and one-half times the street width in height, only 90 per cent of the windows obtain direct sunshine.

The Architect and the Cost-Plus Fee*

By JOSEPH C. LLEWELLYN, A. I. A.

AS chairman of the committee to consider steps to be taken to permit architects to do work on a cost plus fee basis and still retain professional standing, I submit the following:

As stated in the minutes, the resolution appointing the committee might be interpreted as referring to a scheme of charges, discussed and practically endorsed by the American Institute of Architects in convention a few years ago, when the architect in lieu of a straight percentage on the cost of the work was permitted to charge a fixed sum for his service and add thereto the actual cost of drafting, supervision, expert service and an allowance for office overhead.

The purpose of the motion, however, as I understand it, contemplates a discussion of the question as to whether or not forces are at work which will make it advisable for the architect to assume a larger supervision of the construction of work under his care than formerly, extending even to the purchase of materials and employment of labor, and charging for this service a fixed amount plus the cost of preparation of drawings, supervision, etc., or a percentage on the cost of the work as charges are now made for preparation of drawings and that supervision now recognized as a proper part of the architect's services, and considered professional.

Much depends upon the definition of a profession and the limitations put upon it. In general, the term profession implies an occupation requiring a liberal and special education and discipline, and the practice of the profession implies a personal service, employing the knowledge gained by such education and discipline and the experience resulting from practice. This service is rewarded by a fee, supposedly commensurate with the service rendered. Law and medicine are the well-known examples of the professions.

Architecture is no exception to such definition, but in practice the service rendered by the architect often becomes less a personal service than a use of special knowledge in directing and guiding the labor of a number of others in performing certain service. I doubt if anyone will claim that the service so rendered is any the less professional, but rather the claim may be made that the architect is filling a larger place in the second instance than when confining himself to his own personal efforts. Furthermore, it is a matter for debate whether the architect who renders the service to his clients he is supposed to render will be regarded as a professional man at all by the public, because he must combine with whatever sense of proportion, good taste and beauty he may have acquired by reason of environment or by education or travel, those qualities which in the eyes of those about him place him in the realm of pure business.

In fact, the methods we employ and include in the term professional practice, with its governing codes, etc., is being approached steadily by those we have been pleased to call contractors and who have had to do only with the actual business of building. In fact, we hear now of "ethics" among builders, as witness the scheme of organization proposed at the convention of general contractors held in Chicago recently. Is it not possible that the chief value of our term "professional" is to furnish a topic for debate or speculation, and has but little to do with the service architects render to their clients? The real question is, whether our methods permit us to keep abreast with the rest of the world, and if not, whether we cannot change them and retain the spirit of what a code of ethics aims at—honorable service to our clients and fair play to all others.

*Report of a special committee appointed by the Joint Committee on Reconstruction of the Illinois Chapter, A. I. A., and the Illinois Society of Architects.

As to changing conditions under which we are working:

First: For a number of years there has been a gradual increase in and instability of prices for material, and also an increasing scarcity of, and a consequent instability in cost of labor, which have rendered the letting of contracts under the old system of lump sum uncertain and unsatisfactory to contractors, so that they are advocating, in order to eliminate risk of loss to themselves, the adoption of the system known as cost, plus a percentage or fixed fee, in the handling of construction work. The conditions brought about by the war and the fact that the Government placed its stamp of approval on the cost plus fee method in the greater part of its war work, will serve to bring this method of doing construction work into more general use, and contractors will thus approach, in methods of charges at least, the "professional method" of a fee or percentage on cost.

The system has its faults, which are known to all of us, and is capable of abuse. It depends, more than the lump system, upon the integrity of the contractor and a conscientious regard for the interests of an owner, whose interests are likely to be lost sight of in a majority of cases. The attitude of labor toward percentage work is well known. Whatever common interest there may have been between contractor and employees to save contractor from loss under lump sum contracts is absent under the cost plus fee system, and the indifference of labor to an owner's interest, with resulting decrease in efficiency, is well known. Labor is insistent in its demands and the uncertainty of the character of its demands constitutes one of the principal reasons for abandoning the old system. The fact that labor will continue to be an uncertain element of cost in any building project must be taken into account and will have its effect on methods of contracting and our own practice as well. The system will impose upon architects the checking and auditing of bills, unknown under the lump system, and will greatly increase their work without corresponding recompense.

Second: The work of the war has demonstrated the value of co-ordinated and organized effort in spite of the drawbacks bound to occur because of the circumstances under which the organization was effected. It remains to be seen how far the Government, now that the war is over, will retain control of or will attempt to direct construction or building in those lines which have a direct influence on the welfare of the public. Whether the Government will assume any part of this direction or not, the fact remains that the war has given a great impetus to a movement begun before the war, having for its object the proper housing of people in rapidly growing cities and towns, especially in workmen's communities, and that this work is apt to be done under co-operative or organization methods more than heretofore. To handle this work will call for a fuller co-operation of the architect, town planner, utilities engineer and builder, in which co-operation the directing hand should be that of the architect. This particular class of work will bring us closer to a much larger proportion of our people than our work heretofore has done, and it is worth while to prepare ourselves to assume a larger responsibility in operations of this character.

Third: The architect cannot be wholly immune from the effect of changes in business methods in other lines of work akin to his own, which have to do with construction; neither can he ignore the value of public recognition and approval of his services. The fact that construction companies and engineering corporations are employing designers and doing all work from the making of plans and specifications to the construction and furnishing of the building, and that this method is increasing, along

special lines, is another element which has the effect of rendering the term architect less known and understood. The prominent part taken by engineering corporations in all government war work is well known. The reason is evident. The public, even the government, does not associate the architect with the actual operations of building in the same way they do engineering and construction companies; the element of design is to it an intangible thing and secondary to the building operation, and is considered a part of such operation, if considered at all. The special fields in which these companies operate are those offering the great opportunities to the architect.

These three items, namely:

"Instability of prices for material and labor and the consequent rapid change in methods of contractors themselves by which the contractors are approaching the principle of selling their service, instead of taking a chance on profits in the old way, and in which the architect must add greatly to his labor or lose a larger share of control in his work and of the confidence of his client;

"The impetus given to co-operation and organization methods by war activities;

"And the assumption by the contracting and engineering organizations of complete control of building from planning to completion and furnishing, are only three items, but sufficient to justify a discussion of our present methods and the advisability of changes in those methods."

It is the opinion of the chairman of the committee that architects as a class are not assuming the responsibility they should, that there is a wide difference between the appraisal of the service of the architects by themselves and by the general public, and that it is necessary to put a value into their service that will be recognized by a far larger proportion of the general public than obtains at present.

To do this I believe it is necessary for the architect to prepare for and assume a wider responsibility in the actual construction of his building, and a broader initiative in every line of endeavor which has to do with the proper planning and construction of all classes of building, together with the utilities which go to make these buildings complete in service to the community in which they are located. To do this will call for a more complete co-operation of the architects, with specialists in all lines of engineering, covering utilities and equipment (and on occasion, town planning), required properly to lay out and equip the work. Also, through a department of cost and construction, the architect should be prepared to give much closer approximations to cost of buildings than heretofore, and finally he should be prepared to take over the actual erection of the building in those cases where on account of location, size of work or other reason he feels his client's interests are not fully safeguarded by letting of contracts in the usual way, the owners paying bills for material and labor upon properly audited bills, instead of by certificate to contractor as at present.

The objection will be raised that this is contracting and unprofessional. I answer that the subdividing of contracts and building without the general contractor is sanctioned, and I may say favored, by Architectural Societies today, and has been the practice of many architects for years, and is not deemed unprofessional. I confess my inability to see why the purchase of materials and employment of labor by the architect for the few trades furnished by the general contractor, and doing this work for an owner on a fee basis and not for a lump sum with an unknown profit should be unprofessional.

The service rendered is one in which the architect adds to his ability to design and sense of fitness and good taste, a knowledge of building construction and construction operations, which enables him to assume a greater control and responsibility in the execution of his work and for which he receives a predetermined compensation, not a profit representing the difference between cost and contract price. Work done in this manner is not contracting, but is rendering service for a fixed fee or percentage, and is done in a professional way. At the same time it gives the architect an authority and control of his own work which he rarely has at present, and will give him recognition by the public, which goes usually to the construction organization.

Now I am not unmindful of the general contractor in all of this discussion, and believe that we should co-operate with him as far as we can, being always fully alive to our clients' interests. There are many cases, however, where circumstances will dictate the elimination of the general contractor and where, to obtain the best results, unusual methods should be adopted. In these cases I believe the general contractor will recognize the reasoning as sound and will agree with me.

If architects believe that conditions call for change in methods and an assumption of a wider responsibility then the means taken to accomplish that purpose will be modified by the viewpoint of the individual and it becomes the individual's problem. No hard and fast method of procedure can be adopted that will apply to all, but each must work out the matter in accord with his own ideas. Architectural Societies today control members through rules of practice, based on conditions of years ago. They attempt to cover by rule all questions pertaining to practice, but fail for the same reason that the economist fails when he reaches conclusions based on arguments which have not taken into account that element in human nature which seeks change and is not content with things as they are. These rules should be modified and placed on a broader basis, relying more on the individual's sense of honor and fair play.

The State Law licensing architects the revisions of which, in connection with the law licensing structural engineers, is receiving some attention, should be studied with a view to combination. The details of a law which would govern both architects and engineers is a matter for a legislative committee to consider. Under the engineers' law partnerships with architects are permitted. Corporations cannot be licensed, but under the engineers' law corporations are permitted to prepare drawings and specifications for buildings and structures which are erected, built or their construction supervised by such corporation provided that the chief executive officer or managing agent of such corporation in Illinois shall be a structural engineer. Architects are barred from incorporations or forming partnerships, except with licensed architects, as far as any provisions to the contrary are found in the Architects' License Law. The legal phases of the question deserve special study. As architects we are barred from doing in a corporate way what we can do as individuals through co-operative methods, as I have tried to suggest. Can we enlarge our sphere of action and be professional? I think we can, as there is not an element of contract in the matter as proposed, except for service rendered in planning and supervising construction of buildings. If the owner desires a guaranteed cost, then the architect must resort to the contractor in the old way, but the architect should employ scientific methods in preparing preliminary costs and make his estimates trustworthy. My own opinion is that the method outlined is but a modification of methods already employed by architects against whom no charge of non-professionalism has been made. I further believe many cases will be found in practice where better results

can be obtained for owner and architect by an adoption of the scheme outlined in lieu of the old.

The details must of necessity be left to the individual architect, but the objective for all can be a larger initiative and control, more co-operation with others working along lines akin to our own and a more complete service to client and community.

* * *

Why Architects Use the Letter V Instead of U

Editor The Architect and Engineer: Sir—In your December number appeared an extract from the Building Review of New Orleans, criticizing and deprecating the use of the letter "V" in place of "U" in architectural spelling, as being "puzzling to the layman, and not understood": also as "misleading, in giving the public an erroneous conception of the modern architect's true attitude toward practical matters."

This is true enough, not only of the layman, but, I doubt not, of many architects, who have not thought about why they themselves use the "V" instead of the "U."

The following is the reason of said use: In Latin, the vowel U and the consonant V were both denoted by the same character, viz., "V," of which "U" is a later modification. So we find in the Middle Ages, as those who have read old books know, U and V were used indifferently as vowel and consonant; but the V chiefly as vowel, as shown by the fact that the double V—the letter W—is called "double U;" and it seems very likely that W was used for the long sound of U, represented in English by the OO in boot; while the V was used for the short sound, represented by OO in foot; for in our language the doubling of the letter is the most usual method of making a short vowel long, as we seen in "bet"—beet,"

This was a good, sensible arrangement, but was knocked out by certain Dutch scholars in the sixteenth century, who fixed the use of the character "U" for the vowel, as distinct from "V." If these reformers had picked out the V as the vowel, instead of the U, they would have been consistent and the English alphabet would have been gainer by two vowel characters, now both confusingly represented by the double O.

For these cogent reasons let us continue the use of "V" for the vowel sign of the Latin U sound, so that in time its general use may become again established.

Now that we are on the subject of U, V, and W, it is well to remark that there is a short U sound, which I believe is only heard in the English tongue, and which it is well to keep. This is the sound of U in tub; to represent which the character "U" should be retained, exclusively, as by the adoption of the V and W for the long and short signs for the Latin-French U sound, it is not needed there.

There is yet another sound represented by "U" in English—the sound of U in tube. To distinguish this sound, it could be represented by EU, being almost identical in sound with that diphthong.

Thus, with "W" representing the long sound of the Latin U, as in the Welsh language, we shall have separate signs for all the sounds of U in practical use, a consummation devoutly to be wished, and which when reached will have been somewhat aided by the persistent use of the V by the architects and engineers, notwithstanding that they probably built wiser than they knew toward the erection of a more reasonable English alphabet.

W. Jones Cuthbertson.

Stonework in the French Cathedrals

IT WAS long the belief of certain impractical people that modern inventiveness and the perfecting of implements of destruction, with the development of the aeroplane and the submarine, had made a great world war impossible and unthinkable. If we have awakened from this dream, we have found that our wildest imaginings had not prepared us for the appalling loss of life. Apart from the sacrifice of millions of our bravest and best, we were absolutely unable to conceive that the horrors of war would entail an incalculable loss to unborn generations until the remotest time. No one would have believed that nations calling themselves civilized could be led by any passion or despair to the wanton and needless destruction of works of art that form our most valued heritage from the past. The battlefields of Belgium and France, once a place of pilgrimage for all lovers of the beautiful, have been left a wilderness beyond the power of language fitly to describe. Nor are we permitted to doubt that if the advance of the Austrians had not been stayed, the whole of northern Italy, with its priceless art treasures, would have been laid in wilful ruin.

Belgium and northern France contained some of the most magnificent examples of the inspired art of the medieval builders to be found in all the world—Gothic and Renaissance cathedrals, churches, chateaux and town halls. We know that many of the most beautiful of these have been wrecked down to the foundation stones, beyond all possibility of restoration. Some, we fondly hope, may eventually be saved, even if sadly marred by shell and fire. It will be the privilege of America to help in restoration of these marvelous structures, even as we shall assuredly aid in rebuilding ruined cities and re-establishing prostrate industries. We can contribute more than money, and the spiritual encouragement that counts for more than financial aid. It is not generally known that we have in this country by far the most complete photographic studies of the great Gothic cathedrals and churches of France anywhere in existence. These will form indispensable documents if the work of restoration is attempted.

For many years past Prof. William H. Goodyear, curator of Fine Arts of the Brooklyn Museum, has made careful and detailed studies of French and Italian churches, and the result of his work is hundreds of photographs of exteriors and interiors, as well as of architectural details. As to the number of pictures from individual cathedrals in France, which, in the instance of Amiens cathedral, reach the enormous total of 130, there are no other extant cathedral photographs, not even those of the Commission des Monuments Historique, which will exceed four or five interiors for an individual church. A word should be said as to the method of taking the photographs. The focussing was done with the aid of a magnifying glass. The lense was stopped down to the smallest aperture, requiring four times the usual exposure. By this means it has been possible to enlarge the photographs, even to the great size of 40 by 56 inches, without losing any of the sharpness of detail.

The Museum recently gave an exhibition of these enlarged photographs, including 66 exteriors and interiors of Notre Dame at Paris, and others from Soissons, Laon, Noyon and Beauvais. This has been followed by a second exhibition, still open to the public. This includes no less than 55 views of the exterior and interior of Amiens cathedral; 25 views of the matchless Rheims cathedral, and 10 of St. Remy and St. Jacques, also at Rheims; 17 from Chalons and vicinity, including the cathedral, St. Loup, St. Alpin, Notre Dame and St. L'Epine; 10 of St. Quentin; 5 of Rouen cathedral and 7 of St. Ouen, at Rouen. This is such an illustration of Gothic stonework as could be seen nowhere else.

The purpose of this exhibition is to demonstrate the existence in all the mentioned churches of constructive refinements hitherto generally unnoticed or unappreciated by antiquarians and architects, aside from various notable recent exceptions which have been due to the Brooklyn Museum research represented by these photographs.

The so-called widening refinement is especially well represented by this exhibition. It is lacking in only one church of the entire series, namely, the fifteenth century Gothic church of L'Epine, near Chalons-sur-Marne. The widening refinement consists in a delicate outward inclination of the piers, vaulting shafts and clerestory walls of the nave, sometimes in straight lines and sometimes in delicate vertical curves or bends, which have the effect of curves. The cross section of the naves which have this construction has consequently an attenuated horseshoe form. The result is to give an effect of spaciousness to the upper part of the church. The bending or curving vertical lines are also a feature of aesthetic beauty.

Several of these churches also have deflections in plan which are especially well represented by photographs from St. Ouen at Rouen, and from Rheims cathedral. The entire church of St. Ouen, including the line of piers, the clerestory walls and the outer walls of the church, is built on an attenuated S-shaped plan (the return curve which is sometimes called "Hogarth's line of beauty"). Among the most remarkable photographs of the exhibition are two taken in the north and south triforium galleries of St. Ouen, which show these curves. Another form of horizontal curvature is found in the clerestory walls, parapets and roof lines of Rheims cathedral, which are curved on both sides, concave to the nave and convex to exterior; whereas the pier alignment at the pavement of the church is rectilinear. These curves are represented by very remarkable photographs which were taken on the exterior of clerestory parapets. Similar curves are also found in the cathedral of Amiens, and are also well shown by photographs.

Apart from its artistic and architectural appeal, this exhibition has a wonderful interest for every stone man. It gives a most intimate revelation of the methods of the medieval stone-cutter and mason. Nearly all of the structures are built of Jurassic and Tertiary limestones. The cathedral of Amiens is of stone from quarries at Bonneleau, and the cathedral of Rouen of stone from quarries at Vernon. These limestones contain bands of siliceous material, and the result is that the stone weathers unevenly. This is most marked where rain has reached the stone indirectly, as underneath cornices, niches and entablatures. Partly owing to the nature of the stone, and partly, doubtless, to the racial characteristics of the stone-cutters, the finish is bolder and less refined than in the Italian churches, which are mostly of marble, and thus more tempting to the chisel. In the large wall spaces, the finish is generally in rough pointed work. The jointing, too, is bold, and all of this is in perfect keeping with the spirit of Gothic architecture, which is, above all else, the expression of the individuality of the craftsman, as free as may be, while yet in harmony with the great ideas of the master-builder. While this may be said of the masonry, it must not be forgotten that the hundreds of matchless, delicately carved figures on the facade of the Rheims cathedral were the crowning glories of Gothic statuary.

As regards the present conditions of these churches and cathedrals, exact information is lacking in some cases; in others, the information is unfortunately only too complete. The present condition of Rheims cathedral is notorious. No mention appears to have been made in the public press as to the churches of St. Remi and St. Jacques at Rheims. The

large church of St. Quentin, rivaling many cathedrals in dimensions, is wholly destroyed. Several bombs have fallen on the cathedral of Amiens. It was recently stated in the public press that "the cathedral was not irreparably injured." The town of Chalons-sur-Marne has been under fire from a distance, but has never been occupied by the German forces. The present condition of the churches at Chalons has not been mentioned in the American press. The cathedral of Rouen and the magnificent church of St. Ouen at Rouen are undoubtedly in good condition.—Stone.

* * *

The Joy of Building

THE constructive instinct is strong in our race. Normal people rejoice to play with bricks—infants have boxes of them, grown-ups kilns. The desire to build may vary in intensity with the seven ages of man, but the presence of the desire is in itself strong proof of normality. This is not to argue that building is rightly understood of the people.

The instinct to build varies in degree with the strength of the constructive intelligence, which is, in turn, dependent on imaginative force. The highest type is that wherein imagination prompts the desire to design with beauty and build in truth. Both these operations of the imagination are difficult of accomplishment and attractive in proportion to their difficulty. The creative is man's noblest instinct. For this reason it is given to few so to glory in their work as do the architect, the engineer and the builder, just as it is given to few as greatly to rejoice in their labor under the sun because it produces results which are both imaginative and useful.

It is with rare insight in this matter that Kipling depicts his artist-hero Dick Helden in "The Light that Failed," when doomed to blindness:

"He fell to work, whistling softly, and was swallowed up in the clean, clear joy of creation, which does not come to man too often, lest he should consider himself the equal of his God, and so refuse to die at the appointed time. He forgot . . . He threw himself without reservation into his work—the things of this world had no power upon him."

It is obvious that such work, unless undertaken in a spirit of joyfulness, must fail of its rightful appeal to the beholder, and be lacking in that virility of design and execution without which the masses handled appear helpless, inert, formless. Touch these with joyful emotion and they appear as lively members of a vital service.

This is the essential difference between London and North-Western railway engines, and some we have seen in Germany—the former are steel greyhounds, the latter perambulating coffee-pots. Judged from the standpoints of cold logic and useful service a German engine may be as effective, but it is unrelated to the poetry of motion and the spirit of speed, whereas these are incarnate in the best types of British and other express railroad engines.

The difference between mere cold logical efficiency and imaginative inspiration is as that between dull prose and great melodious poetry.

In just the same way a stone arch may be a dull aggregation of voussoirs or a line of life; a brick wall a mass of fire-hardened chunks of clay or a glowing field of joyous color. It is the spirit of the builder that makes the difference.

Ruskin says somewhere that no artist can create a great work of art unless he is in perfect health, and it is equally certain that the joyful spirit rules in all inspiring work.

Rejoicing greatly in the victorious days that have come upon us, let us reflect this spirit in the work that lies before us, so shall the arts of peace which we profess flourish.—Capetown Architect, Builder and Engineer.

How the Architectural Field Can Profit by the Experience of the European Belligerents

By DOUGLAS C. McMURTRIE*

IN the past, our method of dealing with the man permanently disabled in the course of employment has been to pay the worker a pension in the form of compensation, and forget him and his injury. But the cost of disability in the architectural field has not been alone in the premiums paid for casualty insurance. There has been the cost involved in the training experience and adaptation of a skilled worker who does not return to his job, and the fitting of a newcomer to take his place.

There are three means of reducing and approaching the complete elimination of the cost of disability: First, accident prevention; second, thorough medical attention to minimize the disability resulting from the injury, and third, salvage of the remaining abilities of the worker through rehabilitation for self-support. The first of these has already received wide attention from employers and has wisely been encouraged in a financial way by casualty insurance companies and State funds. The values of the two latter have, however, not as yet been appreciated. Their energetic application would effect a tremendous saving to industry.

Many injuries from which men would completely recover in a short time under adequate and high-grade medical attention are treated for an insufficient time, or by incompetent physicians and, instead of a prompt return to work, the case at best drags along over an extended period and at worst becomes chronic or develops into permanent disability. Some States require the insurance carrier to provide but two weeks of compulsory free medical attention to the injured man. For the insurance company to take advantage of this limitation is the most shortsighted policy possible, because for every dollar saved in physicians' or hospital fees, the insurance carrier pays out later ten dollars in compensation. And what the insurance company pays is actually paid by the insuring employers in their regular premiums.

Unlimited medical attention of the highest grade should be an axiom of casualty practice. It should be insisted upon by employer and workman alike. The best outcome of any injury is to have the employee return to his job as a well man in the shortest possible time. It is well to develop a science of dealing with cripples, but the ideal is to have fewer and fewer cripples with which to deal.

The third method of attack on the cost of disability is rehabilitation for self-support—the re-education of an injured man for an occupation which he can follow, or a process which he can perform, in spite of his handicap. The science of rehabilitation is new, and the experience in it has practically all been gained in the effort to make sound and just provision for the disabled soldier or sailor. Every country among the recent belligerents is today operating a comprehensive system of re-education for disabled soldiers, and is placing upon that system more dependence than upon the pension system.

Paying a man a small monthly or weekly stipend on which he is expected to live in idleness is not a very constructive method. With the breakdown of confidence in the pension system, it was realized that the only real compensation for disablement was restoration of capacity for self-support. It was further realized that very few jobs require all the

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physical facilities and that in the present-day variety of industrial processes, it is possible to find a job in which a man with a given type of disability can function 100 per cent efficient. Some jobs are standing, some seated, others require walking about, some jobs at a bench working on small articles require but little strength, others involve great physical exertion. Still others do not require the sense of hearing, in others the sense of sight is not essential. Finding the future work of the disabled man, therefore, requires expert and painstaking choice, but a successful selection is possible even for the seriously handicapped. The first aim is to place the man back in a different job in his own trade or in a trade closely related. In such a job his past experience will stand him in good stead. Failing this, he can be retrained for a different line.

The process of retraining the disabled is known as re-education, and can best be provided in a special school for crippled men. The first school of this kind in the United States is the Red Cross Institute for Crippled and Disabled Men, established in New York City through the generosity of Jeremiah Milbank. At this school, open to disabled civilians and soldiers, alike, six trades are already being taught: Artificial limb making, motion picture operating, oxy-acetylene welding, printing, jewelry work, and mechanical drafting. More will be added as the demand develops. Graduates are already giving satisfaction in the jobs to which they have been graduated, so the enterprise has passed the experimental stage. And in the results attained with disabled soldiers abroad there is overwhelming evidence of the logic and practicality of rehabilitation.

The cost of soldier rehabilitation is being met by the United States Government and by the governments of some of our Allies. It will be admitted without argument as desirable that the advantages of re-education be made available to disabled civilians as well, but will not the cost be prohibitive? The fact is that rehabilitation effects a reduction rather than an increase in the cost of disability to industry or to the community as a whole.

A typical case will illustrate how the saving is effected. A worker in Massachusetts was injured by a fall while working inside a submarine and his hand became permanently crippled. In due course his compensation rate was determined and he was referred to the insurance carrier to be paid ten dollars a week for a long period, with a maximum total payment of four thousand dollars. Since the disability was manifestly permanent, the insurance company wrote the case off their books as a four thousand dollar loss and transferred that amount to reserve to cover the weekly payments. After the compensation had been paid for nearly a year, a new official of the insurance company began looking over the list of men to whom the company was paying compensation. His attention was directed to the man in question and the latter was requested to call at the office of the company. The case was, like many thousands of others, susceptible of rehabilitation for self-support, so the insurance company official put a proposition to the man in very frank terms. "I believe that you can be trained to earn a good living. I want you to understand very clearly, however, that this proposal is to the financial advantage of the company, but I also believe it is to your advantage as well. A total income of ten dollars a week is not very attractive to you, and you would probably rather return to work at a good wage than remain idle. If you will consent, the company will send you to a school of re-education and see if we cannot get you back on your feet in good shape."

The injured man consented to the proposal and the company sent him to the Red Cross Institute in New York. They began to pay him not ten

dollars a week, as required by law, but forty dollars a week, twenty to him in New York and twenty to his wife at home. The company also paid liberally his traveling expenses in both directions. In the period of eight weeks he was re-educated in oxy-acetylene cutting and welding and returned home. He is now making not only a satisfactory wage but twice as much as he had ever earned before the accident took place.

In the whole transaction every party at interest was benefitted. The man was advantaged, in that his general living standard was distinctly raised, and the necessity of working for his living could not be considered as a hardship. The company paid less than five hundred dollars for his rehabilitation, and this expense in conjunction with the five hundred dollars already paid in weekly compensation during the first year of idleness made a total for the case of one thousand dollars. They were thus enabled to charge three thousand dollars of profit to the account of profit and loss. The community was infinitely the gainer in that the man, formerly an unproductive consumer, became a useful producer instead. The community further gained in the elimination of the disabled man from the category of a prospective dependent, because while compensation might have taken care of him in a very insufficient way during the period of idleness, there would have come a time when compensation ceased and then he would have been in a desperate economic status indeed—confirmed in habits of idleness, untrained for skilled work, and without any source of support.

A more intelligent handling of disability by insurance carriers will, therefore, reduce their expense, and will thus cut the cost of casualty protection to the employer. There is needed also, however, some revision of compensation laws so that there may be definite encouragement to insurance carriers to offer opportunity of rehabilitation and definite encouragement to the disabled men to take advantage of it. Practically every compensation case that has ever come to the Red Cross Institute has come on the day his compensation expired. For one year, for two years, or for four years the man has existed in idleness, drawing compensation, and cultivating habits of indolence. When his support was cut off, he then became interested in rehabilitation. Present compensation legislation tends to encourage the man to remain idle, because his payments are reduced by any improvement in earning capacity. A revision of this practice will make for more constructive provision.

In short, the first effort should be to prevent injury, the second to minimize its permanent effects, the third—when disability has ensued—to offset its economic consequences. The execution of this complete program is not only sound humanitarian practice—it is good business as well.

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Brigham Young's Palace to be Razed

News dispatches from Salt Lake City announce the early destruction of Amelia Palace, pretentious residence built by the late Mr. Brigham Young for Mrs. Amelia Folsom Young, reputed "favorite wife" of the pioneer Mormon leader. The announcement was made by Mr. J. T. Keith, architect of Salt Lake City, who has been commissioned to design a new building to be erected on the site.

Since the United States entered the war the mansion has been used as Red Cross Headquarters through the kindness of Mrs. Holmes.

Amelia Palace was known for years as "Gardo House." It is said one of the workmen was responsible for the name, it being due to an Italian mansion

which had that name. The mansion was planned and building commenced by Mr. Brigham Young in 1876, and during 1877 a portion was completed and occupied by Mrs. Amelia Folsom Young. The Mormon Church authorities took over the property and completed it upon the death of the pioneer leader. It was occupied for a time by President John Taylor.

In 1885 the property was seized by the United States authorities, later restored to the church and again in 1891 taken over by the Government, together with other church property which had been seized. During the time the Government held it, the mansion was, for a period, used as an institute for addicts of the liquor habit. Late in 1892 the property was returned to the Mormon Church, the church authorities having conformed to certain Federal requirements. Shortly thereafter the house was sold to Mrs. Holmes. Prior to this sale the house was occupied by Colonel Isaac Trumbo, who was a candidate for the United States Senate in 1896.

Amelia Palace has been one of the historic palaces pointed out to tourists who visited Salt Lake City. It is just across the street from the famous Beehive and Lion houses, and the Eagle Gate, notable relics of the days of Brigham Young.

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Safety Treads for Stairways

INTERESTING information on safety treads for stairways was brought out by Mr. Carl King in a discussion of a paper on Factory Stairs and Stairways presented at the annual convention of the American Society of Mechanical Engineers. An abstract of Mr. King's discussion follows:

"A safety tread, in order to be permanently effective, should be so designed as to meet abnormal or unusual conditions of almost every character. On stairways which are exposed to the elements the treads are flooded in rainy weather, and if the temperature is very low the water becomes a sheet of ice. Under traffic water and dirt form a slimy coating over the treads, which renders them very dangerous to walk upon.

"Many accidents are caused by conditions which are common to stairways inside as well as outside of buildings. The presence of foreign substances on the tread surface, such as fruit peelings, cigar and cigarette ends, scraps of paper, pencils, or burnt matches, when on a flat surface act as anti-friction agents and are the direct cause of many accidents.

"In order that there may be absolute protection from slipping, a safety tread should be so designed as to provide for direct contact between the shoe sole and the tread surface under any and all conditions. Preferably, the tread surface should be so designed with grooves, or corrugations of ample size to provide channels for the drainage of water and the displacement of any substance; the higher parts thus being left clean and dry. To be effective, the channels should be of such width and depth as will insure a direct contact surface, and the contact surface itself should consist of anti-slip material, such as lead or an abrasive composition, which will remain uniform until the tread is completely worn out.

"In the matter of cleanliness, it can readily be seen that any foreign matter dropped upon the tread or scraped from the soles of shoes can be swept to the end of the tread, which need not extend to the skirting or baseboard, and thence down the stairs, making it as easy a matter to keep the stairs clean as though there were no safety treads upon them."—Engineering and Contracting.

Problems of the Architectural Profession

MR. H. M. PATTERSON, architect of Los Angeles and the new president of the Southern California Chapter of the American Institute of Architects, in assuming office, delivered the following address in which he discussed the problems confronting the architectural profession and urged that they be taken up immediately for solution:

"It is fitting at this time for me to express my sincere appreciation for the honor you have conferred by choosing me your president for the current year. I thank you for your confidence and greatly appreciate the evidence it gives that the members of this chapter are real sportsmen—willing to take a chance.

"In any case, the die has been cast—and it is up to each and every member of the chapter to see that we 'go somewhere from here' as an organization and as individual members of the profession, during the present year's work.

"It need not be stated that we hope for—and expect—better business conditions in construction lines than have prevailed during the last two years; but there is not much to warrant the expectation for normal conditions in the building line, for many months to come. There is evidence of a change for the better and the outlook is reassuring to a degree.

"Owing to past experiences and present conditions, are we not warranted, as a Chapter of the A. I. A., as individual members of a profession of standing, and as loyal citizens of our beloved Southland and Nation, that we take stock, clear away rubbish and in a frank and manly way face the problems of today and of the days to come?

"The warrant for the architect's place and existence, is the real service he renders his day and the time to come; and there is no question as to the effective service that has been rendered—even here in the United States. In spite of all this we must face the unpleasant fact that at the present time there is prominent 'Why the Architect?' in connection with many and important fields of building construction.

"I think that many of us began to feel that something was wrong with the practice of our profession a good many years ago, but we mostly turned our eyes from the unpleasant situation and salved our anxiety and wounded pride with the conclusion that the troubles were largely local and a result of our newness and rapid growth; that the profession would be in normal condition when we had passed beyond the 'half goose half gosling period' of expansion; so we turned over and went to sleep again.

"We now have to acknowledge that we were mistaken—both as to diagnosis and conclusion, and are awake to the fact that an abnormal (to us, at least) and unpleasant condition as to the architectural profession prevails in practically all parts of the country.

"Our periodicals—even the Institute Journal—take cognizance of the situation, and agree that the time for frank and thorough investigation is here. 'We are facing a condition, not a theory.'

It was not to be wondered at, at least in view of local conditions, that we may have thought the modern building company and plan-making contractor, with their usual second and third rate designers and specification writers, would have a short existence. We were warranted too, in thinking that their schemes for financing of building projects would not last long; for a large proportion of these financing schemes were questionable, to say the least. I think we forgot, however, that there was sure to be improvement along the lines of weakness when the fields of operation were so large and inviting.

"Well, improvement came and no matter whether we like it or not, the public approved and we must acknowledge that these concerns and methods

are here to stay for a very considerable time, to say the least. While we realized the fact of these conditions, I do not believe many of us had an idea that there might be something wrong with our standards and practice.

"The blow 'that almost killed father' and brought us wide awake, came when this country entered the war, and the Federal Government had to put over a tremendous building program to provide for the carrying on of our effort to aid True Democracy. Then the profession was forced to face the unpleasant fact that (quoting from "The Forum" editorial notes in the issue of January, 1918), 'architects were treated as inefficient back-numbers in Government building activities.'

"These conditions brought forth much protest, criticism, unpleasant surprise and a very general demand for searching investigation and consequent re-adjustment. Whether the criticism of the architects and the action of the Federal authorities has been warranted, has almost nothing to do with the seriousness of the situation; the serious part of our condition arisen from the fact that at the present time a large part of the public believe that the profession has fallen down; and that there is something radically wrong with the standards and practice of the architectural profession.

"Whether the Southern California Chapter jurisdiction has been harder hit than other localities of the country, I do not know; but the problems of the Institute are our problems, and we certainly have had large measure of unpleasant experiences in Southern California, no matter what the proportionate degree; so there can be no excuse for our ignoring the problem and not trying to aid towards betterment.

"Is it possible that our standards and practice have not been quite fair and reasonable and that our patrons have suffered because of such injustice? or has trouble arisen because we have not consistently adhered to the Institute code of ethics and practice?

"Has the profession suffered through the unreasonable and autocratic treatment that some architects have given their clients, thereby creating prejudice against the profession? or is it a fact—as has frequently been charged—that most architects are impractical dreamers?

"Is the present condition to be traced to lack of intelligent consideration of the profession? just a natural condition in the evolution of a great constructive art, that patient persistence and waiting will remedy and bring the day of proper appreciation and understanding?

"Nothing is easier than to ask questions, make suggestions, or to criticise; but to indulge such methods with an intelligent and constructive purpose, challenges our best effort and will result in definite good.

"If these suggestions meet your approval, I would propose that we ask our committee on ethics and practice to take the whole matter under consideration and outline a plan for investigation and solution of these acute problems; so that we may proceed along reasonable and sane lines in trying to determine 'where we are at.'

"While convinced that we are warranted in urging prominent place during the coming months, to these problems of the profession, I would also urge active effort along the lines of city planning, education, ethics and practice, competitions and public information, and the other definite lines of activity to which the chapter stands committed.

"Our activities along these lines will surely tend to the better understanding of the architect by the thinking public. We owe practically all that we have and are—as chapter members and as individuals—to the public; and we must acquit ourselves with candor and fullest consideration to both local and national advancement, if we are to be deserving of confidence.

"In this connection I would state that in a recent interview with Mayor Woodman—brought about by the kindness of our retiring president—the Mayor told me he expected to give this chapter recognition in the appointing of the proposed city planning and city hall commissions. His Honor has a sane view as to the proper functioning of these commissions, and members of this chapter will evidently have opportunity to be of real and particular service to the city in this connection.

"It will also be well worth while, besides being our bounden duty, to continue offers of service in an advisory capacity to various boards and commissions of city, county and state, for this line of work has been, and will be of real value to all concerned. We should always be glad to give any such service, even if no consideration attaches.

"The matters touched on in this brief address, are of knowledge and live interest to every member of the chapter and the entire profession; and it seems to me that much importance attaches to the manner we strive to aid in the solution of vexing problems; that we be consistently active in all efforts for the public good, and to advance the real interests of the institute.

"May we be alive to our opportunities and play the game like men."

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Oak Flooring*

By W. L. CLAFFEY

WHEN the Oak Flooring Manufacturers' Association of the United States was organized over ten years ago, the matter of general advertising was carefully considered, and it was the sense of that first meeting that a nation-wide advertising campaign be conducted that would reflect to the credit of the Oak Flooring industry as well as a benefit to the retail lumber dealers. I have information from a very reliable source, indicating that the various lumber manufacturers' associations intend to spend $1,840,000 this year for advertising. Oak Flooring requires but very little in the way of introduction to the average retail lumber dealer, as our product has been on the market for over forty years, and is now used generally in every class of construction. There is a grade made that will fit every pocketbook, from the most modest householder to the man who owns a mansion. In fact, we have a grade of Oak Flooring for every floor used. The use of Oak Flooring is not only confined to buildings where people dwell, but it also is used very extensively in factories, warehouses, Government buildings, hospitals, office buildings, department stores, educational buildings, churches, schools, clubs, etc.

The State of Ohio ranks high in the consumption of Oak Flooring, and I believe this is true of other lumber products.

Oak Flooring is often emphasized when landlords advertise in newspapers when offering property "for sale" or "for rent." They know that Oak Flooring in any house attracts a better class of tenants and buyers and invariably increases the selling and renting values. When Oak Flooring is used in any building, it usually means that other materials used in the house are all of a high class character.

The great wave of construction that will sweep this country will soon be on. Residences, apartment houses, farm buildings, etc., will be the very first to go up. The best authorities at this time state that the United States is short 700,000 residences alone, and very short on practically every character of building. As a whole, this country is forty per cent underbuilt. Therefore, it is not unduly optimistic to say that 1919 should be the

*Extracts from an address before the Ohio Association of Retail Lumber Dealers, January 16, 1919.

biggest building year in this country's history. Every town should push the "own-your-own-home" movement, and the entire building industry is deeply concerned to interest wage-earners in purchasing and owning their own homes. A workman who owns his own home is interested as a good citizen in the development of his own locality and the general prosperity of its industries. He becomes an asset of a greatly increased value. The saving required to pay for the home is a very powerful encouragement to thrift in his household.

A few years ago I heard a prominent physician lecture on "Sanitation." In the course of his talk he emphasized very strongly the fact that if old-fashioned carpets which covered the entire floors were eliminated and hardwood floors (of course he meant Oak Floors), and rugs were used, that the health of the family and community would be greatly improved.

It is very true that the old-fashioned carpet is the champion collector of dust and germs, and to keep a carpet thoroughly sanitary it would be necessary to wash or steam it every week or two, and of course this is not practical. Anyone who has been around the spring cleaning and caught a view of the dirt that has sifted through the old-fashioned carpet was certainly appalled at the sight.

Women are responsible for the modern oak floor and rugs. They were quick to recognize that oak floors and a few rugs created an artistic appearance and simplified house cleaning and housekeeping.

In small towns where Oak Flooring is not generally known or used, it surely would pay a dealer to lay a few floors gratis in certain houses in the town, in order to get Oak Flooring started. This plan has often been tried and the results have been very good. After a few rooms are laid in this manner it would not require a great length of time before the entire neighborhood would want similar floors.

Every town has a great many old houses that were built years ago or before Oak Flooring became generally known. These old houses offer very fertile fields for the dealer with some coöperation on the part of the contractor and carpenters in the laying of Oak Floors. The winter season, when most outside work is generally slack, is the best time of the year for this line of work. For this purpose our ⅜″ Oak Flooring offers the ideal thickness from the viewpoint of economy and appearance.

During a part of the period of the war our Association maintained a branch office at Washington, D. C., and was successful in obtaining orders for millions of feet of Oak Flooring for the United States Housing Corporation, as well as the United States Shipping Board, for the various housing projects. The largest project that we had was at Norfolk, Va., where we shipped forty-five straight carloads of Oak Flooring during the month of September. The next largest was at Quincy, Mass., where we shipped twenty-seven straight carloads of Oak Flooring in October. These orders were mostly for thirteen-sixteenths inch Select and No. 1 Common, although we had some orders for three-eighths inch. These orders were indeed welcomed and came at a time when embargoes and every possible restriction was placed on lumber products.

Our industry many years ago standardized all the milling features on all Oak Flooring products and branding is done on every bundle of Oak Flooring to show the grade, the color and the contents. This conforms with the National Retail Lumber Dealers' Association's Declaration of Business Ethics, Section 5, on Advertising Lumber, and Section 3, on Branding Lumber. Both standardization and branding have proven very advantageous for our industry, as well as for retail lumber dealers. It was surely a great help to our Government on their flooring needs during the war.

The Calaveras Dam Slide — Report on Failure of Hydraulic Fill

IN connection with hydraulic dam construction by the United States Reclamation Service, an investigation of the slide which occurred at the Calaveras dam of the Spring Valley Water Co., near San Francisco, planned early in 1918, was made by Messrs. D. C. Henny and Charles H. Swigart, consulting engineers of the Service. Their report is printed in the Reclamation Record, from which the following abstracts are taken:

The elevation and principal dimensions of the Calaveras dam as originally designed are as follows:

Surface bed rock at center line, 560 feet.
Earth at center line, 590 feet.
Spillway crest at center line, 790 feet.
Top of dam, 800 feet.
Top of dam above surface bed rock, 240 feet.
Top of dam above surface earth, 210 feet.
Top of dam above spillway crest, 10 feet.
Top width, 25 feet.
Water slope, 3 to 1.
Dry slope, 2½ to 1 with one 20-ft. berm 100 feet below top.
Length at top, 1,300 feet.

The design has been amended so as to raise the top 10 feet by steepening the upper portion of the slopes, with the object of increasing spillway overflow capacity.

Water control was to be had by a conduit on rock foundation passing through the dam with concrete gate tower near the water toe. An overflow spillway is provided in rock through a saddle near the west end of the dam.

The total volume in the dam is stated as 3,085,000 cubic yards. The intention was to place all the material by the hydraulic process. The material was derived from borrow pits upstream from the dam and on the west side of the reservoir.

The work was started in 1913. Material in the borrow pit was loosened by powder and washed down by giants to a pump pit, from which motor-driven pumps conveyed it through 14-inch steel pipes to the dam. As the elevation of the work increased booster pumps were installed on the pipe line.

The material consists of shale rock, with some intervening layers of sandstone, the rock being overlaid with a few feet of earth. The shale broke up readily by the action of the jet which partially converted it into clay, so that the material as it passed through the pipe and was discharged on the dam consisted partly of rock fragments, the balance being clay. All evidences indicate that there was practically no gravel, and the percentage of sand is also very small being derived from the breaking down of the sandstone.

The material was delivered to the dam on the outer slopes between which a pond was maintained toward which the coarser deposits sloped and which consisted of pure clay. The relative proportion of these materials has been stated to be about 50 per cent of each. It is thought that this understates the proportion of clay. The mixture as it was pumped passed through the pipes at a velocity of 10 feet per second without causing serious trouble, and the percentage of solids carried was stated to be from 10 to 15, which would hardly be compatible with a 50 per cent proportion of coarse material. It was stated, however, that the percentage of solids carried was occasionally somewhat smaller.

The original plans for an all hydraulic fill dam were carried out until the pond in the dam had reached an elevation of 45 feet above stream bed. Early in 1915 some doubt existed as to the ability of the outer slopes to hold the liquid

inner core in place, due to excess of clay. Part of the pumped clay was accordingly wasted into the reservoir in an effort to secure a greater proportion of coarse material by the hydraulicking process. The next step was the changing of plans to the extent of dumping dry material on the downstream slope from wagons loaded by steam shovel from a new pit near the west abutment of the dam.

Some time during 1916 a more radical change was made, it being decided to dump dry material on both slopes, the general scheme being to place in this manner about one-third of the mass upstream and one-half of the mass downstream of the center line of the dam. The large amount of material so handled caused a change of conveyance from team to dump cars on tracks laid on trestles and on the dam itself.

The material was dumped loose, no spreading or rolling being done. The toe of the dump toward the inside of the dam projected over into the core and as the work progressed there was an ever-increasing mass which rested on the mud core. The water face of the dam was finished to the slope shown on the plans (Fig. 1), the lower part up to a vertical height of 60 feet being paved with concrete 3½ inches thick. The original intention of an all concrete paved

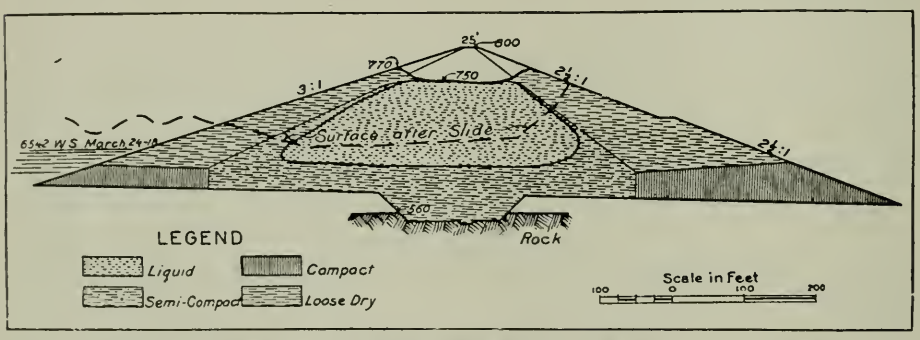

FIG. 1—CROSS SECTION OF CALAVERAS DAM, APPROXIMATELY AT POINT OF MAXIMUM HEIGHT

slope was abandoned at the stated height and for the higher work rough riprap was substituted. The down-stream fill was deposited by dumping from cars and the slope was not filled out, but was brought up somewhat irregularly at the angle of repose, with occasional berms, which were to be filled out later by additional material to the intended slope of 2½ to 1.

In this manner the work proceeded until June 18, 1917, when the sluicing operations were stopped, as a movement on the water face of the dam, amounting at some points to 18 inches, had been observed. At that time a further movement of part of the water face occurred, of 6 inches in 12 hours. This movement, however, ceased and sluicing was resumed on July 7, 1917, but was again stopped after 12 days' work.

The dumping of dry material on both slopes was continued. The overlapping of this dry mass over the edge of the mud pond resulted in serious settlement, the surface sinking down from 3 to 5 feet at a time. Coincident with this sinking was a rise in the pond level, which had mounted in September, 1917, when one of the authors visited the work, to over 5 feet and which subsequently increased to 18 feet.

On February 12, 1918, sluicing was again resumed, but further movement becoming apparent it was stopped on March 4. The maximum movement toward the reservoir which was measured amounted to 4 feet, until the morning

of March 24, when a mass estimated at 800,000 cubic yards slid into the reservoir.

At that time the work had been carried up so that the outer slopes were within 40 feet and the pond level within 60 feet of the ultimate top of the dam (elevation 810) and the dam as to earth volume was over 90 per cent complete.

From statements made to Messrs. Henning and Swigart crushing or grinding sounds were heard by a man passing over the dam about 7 a. m. on the day of the slide, who reported also having received the impression that the top of the concrete facing which projected about 12 feet above the water had bulged out of line. The only observer at the time of the slide, which started at about 7:30 a. m. and lasted a few minutes, was the young daughter of the engineer, who saw the gate tower sway and topple and the front of the dam move out toward the reservoir.

The exact movement of the slide is a matter of speculation. Some of the outer slope material moved toward the reservoir some 600 feet, as is evidenced by a telephone pole which was set in the slope near the top of the dam at its west end and which now stands far out in the reservoir. Much of the water slope material has moved a smaller distance. The entire mass may have moved as a body toward the reservoir with a slightly swinging motion, which caused a breaking away of the body from the east abutment. The space thus opened permitted the mud contained in the pond to flow out into the reservoir. This removed the support from under the dry water face fill, which broke down in large bodies. A roadway which was originally on top of the dam now rests about halfway between its previous position and the water toe and inclines downward toward the center of the dam base.

The mud flow extended to the water line, which was at elevation 654.2, or about 116 ft. below the top of the dry fill and 96 ft. below pond level. In its progress it probably gouged a deeper channel through the outer fill and finally left the bottom of the curved mud channel on a plane reaching from the water level back into the core space at a slope of about 1 to 20.

The moving mass knocked the upper part of the gate tower over, probably leaving its lower part and foundation undisturbed. Some mud entered the outlet conduit, but the inflow appears to have been quickly stopped by deep burial of the opening under the mass which followed.

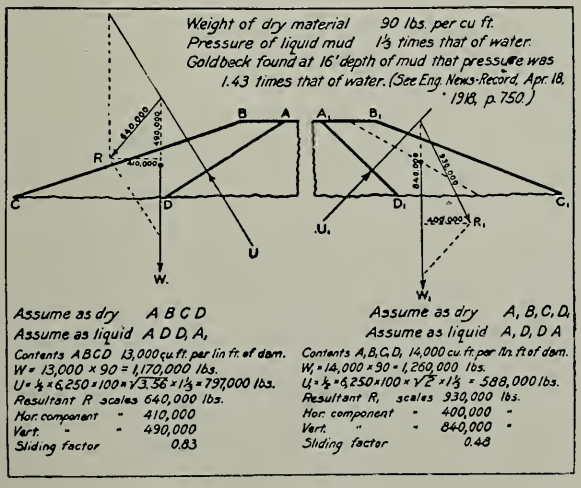
Weight of dry material 90 lbs. per cu ft.
Pressure of liquid mud 1⅓ times that of water.
Goldbeck found at 16' depth of mud that pressure was 1.43 times that of water. (See Eng. News-Record, Apr. 18, 1918, p. 750.)
B
A
A1
B1
R
410,000
490,000
C
D
U
W.
D1
C1
U1
R1
W1
Assume as dry A B C D
Assume as liquid A D D1 A1
Contents A B C D 13,000 cu. ft. per lin. ft. of dam.
W = 13,000 × 90 = 1,170,000 lbs.
U = ½ × 6,250 × 100 × √3.56 × 1⅓ = 797,000 lbs.
Resultant R scales 640,000 lbs.
Hor. component - 410,000
Vert. " - 490,000
Sliding factor 0.83
Assume as dry A1 B1 C1 D1
Assume as liquid A1 D1 D A
Contents A1 B1 C1 D1 14,000 cu. ft. per lin. ft. of dam.
W1 = 14,000 × 90 = 1,260,000 lbs.
U1 = ½ × 6,250 × 100 × √2 × 1⅓ = 588,000 lbs.
Resultant R1 scales 930,000 lbs.
Hor. component - 400,000 "
Vert. " - 840,000 "
Sliding factor 0.48

FIG. 2
DIAGRAM
OF FORCES

A cross section of the dam at its highest point as it stands at present is sketched on Fig. 1. It will be noted that part of the loose fill on the dry face of the dam was taken out with the slide. The short upward grade toward the reservoir does not indicate any sliding plane, as the core mud at this point flowed largely in a direction parallel to the center line at the dam and toward the opening at the east abutment.

While the slide itself was unexpected the repeated discontinuation of sluicing and the change in design from an all-hydraulic fill to a partial dry fill, as well as close watch of progressive movement and tests of pond material, indicate that the engineers in charge were cognizant of possible danger.

Typical tests of pond material quoted from a large number are as follows:

Jan. 23, 1915.		March 14, 1916.	
Depth below pond level.	Water contents by volume.	Depth below pond level.	Water contents by volume.
10 Feet	77 per cent	20 Feet	71 per cent
20 "	70 " "	30 "	73 " "
30 "	71 " "	40 "	65 " "
40 "	58 " "	48 "	64 " "
50 "	63 " "	62 "	53 " "
60 "	49 " "	69 "	46 " "

Tests were also made by forcing a 1½-in. pipe into the core material from a boat. Penetrations were had of from 75 to 90 ft. Later, 6-in. cast-iron ball tests were made, the depth to which such ball sank being 45 ft. while sluicing had been in progress, which reduced to 12 ft. and 5 ft., respectively, 6½ and 8½ months after discontinuance of sluicing. Tests of material removed with an auger from a well driven into the core since the accident occurred gave a water content of from 35 to 45 per cent.

Some additional information may be presented regarding the nature of the dry fill as observed from the borrow-pit and in the dam. It has been described as principally sand rock. Messrs. Henny and Swigart's observation is that only a small percentage is sand rock, and that the rock portion is principally shale. This material as dumped loose may have contained 40 per cent or more voids and in mass may have a weight of about 90 lb. per cubic foot. The fill as it sank down in the pond probably did not become mixed with the clay mud, but drove it bodily down and to the side, causing the pond to rise.

The mud surface, as left after the accident, had cracked from drying, but showed moist a few inches below the surface and had free water standing in the cracks from 1 to 2 ft. down. It could not sustain a man's weight and a lath could easily be made to break through the thin, dry crust and be pushed down its full length.

The extent to which the liquid mud gains in compactness at increasing depth from the surface of the pond can only be surmised from the tests above quoted, the interpretation of which for this purpose is uncertain. It appears that at depths of 60 and 70 ft. the material still remains supersaturated. In order to present at least some attempt at analysis of acting forces our conception of the conditions in the interior of the dam are roughly indicated on Fig. 1.

For purposes of approximate calculation Fig. 2 was prepared, in which the lines AD and A_1D_1 are assumed to represent planes of demarcation between liquid mud transmitting pressure as freely as water and com-

pacted material or loose fill. The rough conclusion which may be drawn on the basis of assumptions made is that a sliding factor of about one-half for the dry mixed rock and earth fill used in the dam is safe and that when this factor reached eight-tenths sliding took place.

The assumptions on which the above study is based are entirely compatible with the fact that the slide occurred several weeks after sluicing had stopped.

The additional dry material which was placed during the interval could have but little influence on the vertical load on any low sliding plane. Its penetration into the mud core, however, had the effect of raising the surface of the mud pond, thus increasing the hydraulic pressure against the slope fills.

* * *

Distinguished Japanese Architect Visits San Francisco

Thirty-two years ago, Mr. K. Shimoda of Tokio, architect and today reputed to be one of the wealthiest men of Japan, was a humble draughtsman in the offices of Mr. A. Page Brown in San Francisco. A few days ago Mr. Shimoda returned to San Francisco, where he labored in his early years, and gazed with no little interest upon the city that had sprung from the ruins of 1906.

Mr. Shimoda examined particularly the Crocker National Bank building, on the plans for which he worked in Mr. Brown's office.

"I see little change in it," said Mr. Shimoda. "Here and there a few minor repairs. It stood like Gibraltar. It was the first of its type of modern office buildings in the United States."

Mr. Shimoda renewed old acquaintanceship with Mr. Maybeck, the designer of the Palace of Fine Arts at the Exposition. "It was good to meet this man, a genius and a fine personality," said the Japanese. "He taught me much of the history and philosophy of architecture. I shall enjoy viewing his splendid creation."

* * *

Santa Barbara Court House Competition

The Board of Supervisors of Santa Barbara county has decided to hold a competition to select an architect for the new county court house to be erected at Santa Barbara. The competition will be held in accordance with the rules of the American Institute of Architects. The architect submitting the best plan will be given the commission to prepare detailed drawings and supervise the erection of the building. Other prizes will be: Second, $750; third, $500; and fourth, $250. The building will cost $420,000 and bonds will be voted to finance the project. The competitive plans are to be submitted to the board by April 14th. The architects who submitted credentials and who have been invited to compete are as follows:

Messrs. Hudson & Munsell, Mr. W. L. Woolett, Mr. G. W. Eldridge, Mr. H. H. Hewitt, Mr. A. R. Kelly, Mr. C. M. Winslow, Mr. C. H. Russell, Mr. F. A. Noyes, Mr. Thomas Franklin Power and Mr. Arthur G. Lindley, all of Los Angeles.

Mr. C. H. Miller, Mr. Mathew O'Brien, Mr. W. C. Hays, Mr. John Reid, Jr., Mr. E. A. Mathews, Messrs. Bliss & Faville, Mr. A. L. Worswick, Mr. J. W. Dolliver and Mr. William Mooser, all of San Francisco.

Mr. Roland F. Sauter, Mr. Winsor Soule, Mr. J. W. Young and Miss L. A. Rigg, all of Santa Barbara.

Mr. Warren C. Perry of Berkeley.

Mr. T. O. Kistner of San Diego.

Mr. W. N. Bowman of Denver.

Mr. F. C. Brewster of Riverside.

Mr. Reginald D. Johnson of Pasadena.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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The Mind's Eye in Architecture

This is only another way of expressing what is understood by optical refinements, but there is a difference which is not generally appreciated between satisfying merely the outer eye geometrically and logically, and the inner eye of the mind psychologically. Linear perspective drawing is without doubt of great value for the purpose of forming some idea of the appearance of a building in execution; and for this reason it is right that the student should learn the importance of being thoroughly well acquainted with this method of representation, and of making use of it as one of the means of producing a beautiful building.

But linear perspective drawing, being only monocular, is therefore, after all, only a conventional method of representing objects. On this account, and owing to its limitations in other respects, it is far from being a wholly competent means of suggesting optical corrections in designing buildings.

Independently of the laws of perspective drawing, and before they were discovered (or rediscovered), it would appear that there must have been some intuition, or application of the principles of optics, which guided the great architects and builders of the classic and middle ages, both east and west, in the production of their works.

Before this country was awakened to the optical refinements of the Parthenon by the discoveries of Pennethorne, confirmed by Penrose's accurate investigations, it was never suspected to what a degree of *finesse* the ancient Greeks had carried their architecture. Stuart had no suspicion of it. True, it was known to our cruder perceptions that a slight swell or entasis must be given to the sides of a spire or a column, otherwise they will appear to be slightly concave, but it was only in a few such instances that it was felt that there was an inner eye to be respected.

We have no authority for supposing that the Greeks made use of perspective; indeed the employment by them of optical refinements totally distinct therefrom leads rather to another

conclusion, namely, that they must have determined the lines of their buildings on more fundamental principles than those merely of perspective drawing.

Among modern architects of the French schools perspective drawing is not so much resorted to as it is in this country, declares The Builder of London; even their most extensive views and architectural compositions are shown merely in elevation with shadows accurately projected, and yet their executed works are often models of proportion and of propriety, implying that they are probably specially endowed with an intuitive faculty in no common degree. Does the habit of drawing in perspective tend in any way to dull this faculty? It may be that it leads the architect too far towards the determining of what would be better left to his inner sense, his mind's eye.

Whether we can discover and cultivate such a faculty of intuition, and apply it in the carrying out of our own buildings, is certainly a question which deserves the consideration of every thoughtful architect.

It would no doubt be futile to attempt to make precise rules on æsthetic grounds on such a subject, for often has it been the case that when such conditions are laid down, there are those whose originality compels them to show how the supreme object of beauty can be achieved in disregard of them.

Architects and Engineers Should Co-operate

Members of the American Society of Civil Engineers in California will urge the passage of a bill to be introduced at the present session of the California general assembly, providing for the registration of engineers. It is also expected that members of the American Institute of Architects in the State will revive the bill which failed at the last session of the general assembly, revising the State law for the registration of architects. This bill failed, in the opinion of some members of the last general assembly, chiefly because of a conflict of interests between the architects and engineers. We agree with Southwest Builder and Contractor that there should not be any disagreement between the two professions. They have many interests in common and it should not be a difficult matter for them to reach an understanding on legislation that will be mutually beneficial. Co-operation was one of the greatest lessons of the war and it is difficult to believe that this lesson will be forgotten in the period of reconstruction that is now at hand.

Architects Want Licenses

A new bill providing for the registration of architects has been submitted to the Washington State Legislature with an appeal for its enactment, by the Washington State Chapter of the American Institute of Architects. The bill proposes to regulate the use of the title "Architect" by requiring all persons using it to have a certificate of registration, which may be obtained from an examining board upon proof of an established practice in the State, by presentation of certificates obtained in other States or diplomas from accredited universities or schools, or by passing an examination. The bill submitted was accompanied by the following preamble:

"In presenting this bill to the State Legislature we would clearly and firmly have impressed upon its members that the bill is not intended to, nor does it, prevent any person of any calling whatever from making drawings for buildings of any character, but regulates only the use of the title Architect. This, on the face of it, must show clearly a genuine lack of desire to monopolize or restrict the work of designing buildings, and also real desire to be of service to the public and indirectly to the profession. It is generally conceded that the public at large is almost universally ignorant of the functions of an architect and of the minimum qualifications for the practice of our profession. And this ignorance is but natural when we recall how seldom the individual undertakes to build, employing an architect. And still further, having once built, and by experience having gained some knowledge of the functions and the necessary qualifications of the architect, how seldom he again builds without employing an architect, making of value the experience thus gained. It is to protect this individual in the first instance largely, that this bill operates. It affords him some assurance of at least minimum qualifications in the architect he employs, of which, in the present conditions, he is likely to have little. If the unqualified practitioner has not the ethical consciousness to restrain him from foisting himself on the public as a qualified one, then as in other professions he should be restrained by law. If he be ignorant of the minimum requirements as herein presented, then, these present a standard for him to attain.

"The law as drawn, sets a standard of education for the time being and gives evidence that the architect so registered has had the proper training and experience brought about through academic training and subsequent practice or that he has acquired in practice for a long period a comprehensive knowledge of architecture, and has presented proof of this knowledge. This fostering the educational brings to the public a better servic, procuring a minimum requirement by law as exists in the profession of law and medicine and other professional and technical occupations. It checks license to do that which is bad and provides punishment for so doing."

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Address all communications to Geo. M. Nelson, 810 Bank of Italy building, San Francisco.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Competition for Bank Building

Eleven San Francisco and Fresno architects have been invited to participate in a competition for a six-story Class A bank building, costing $500,000, to be erected by the Bank of Italy on the site of the present Techau Tavern, northwest corner of Powell and Eddy streets, San Francisco. The programme was prepared by the competition committee of the San Francisco Chapter, A. I. A., and Mr. Sylvain Schnaittacher, the architectural adviser. There will be four prizes of $1,000 each, besides the prize to the winner of 6 per cent of the total cost of the building. The list of competing architects follows:

Bakewell & Brown
W. C. Hays
E. A. Mathews
Reid Bros.
Weeks & Day
R. C. Felchin, Fresno
Bliss & Faville
Edward T. Foulkes
Lewis P. Hobart
W. D. Shea
Italo Zanolini

Mr. Myron Hunt Busy

One of the busiest architects in Los Angeles is Mr. Myron Hunt, Hibernian Building. Following is a partial list of new work in Mr. Hunt's office:

Brick bank building for the Santa Barbara County National Bank.

Hotel and cottages to cost $1,000,000 for syndicate headed by Mr. D. M. Linnard.

Residence and warehouse at Mazatlan, Mexico, for Mr. Louis Bradbury.

Addition to residence of Mr. Russell Taylor in Berkeley Square, Los Angeles.

Residence for Mrs. Martha Chapaton in Fremont Place, Los Angeles.

Fire-proof residence for Mr. Keith Spalding at Oak Knoll, Pasadena.

Five-Story Addition

A five-story class A addition is to be built to the five story office building on the southwest corner of California and Battery streets, San Francisco. The building was recently purchased by the Robert Dollar Company, which is to use the additional floors for office rooms. The improvements will probably cost $200,000. The building was erected in 1909 from plans by Mr. W. L. Schmolle. The structure rests on pile foundations. Mr. C. W. McCall of Oakland is making the plans for the addition.

Los Angeles Chapter, A. I. A.

Los Angeles Chapter, A. I. A., is now entirely free of debt. During the past year the Chapter lost, through death, Mr. H. Alban Reeves; also Mr. Frank Wilson Young, whose sudden death occurred in November. The Chapter acquired, by assignment, Mr. Floyd E. Brewster of Riverside, formerly of the Brooklyn Chapter, and Mr. J. W. Woolett of San Francisco.

The following committees have been appointed to serve during the year:

Membership—Walter E. Erkes, Lyman Farwell and P. A. Eisen.

Ethics and Practice—S. Tilden Norton, Alfred W. Rea and S. B. Marston.

Entertainment—J. J. Backus, A. M. Edelman and Henry F. Withey.

Contracts and Specifications—John P. Krempel, Frank D. Hudson and Robert H. Orr.

Permanent Legislation—G. E. Bergstrom, J. J. Backus and J. E. Allison.

City Planning—Henry F. Withey, Sumner P. Hunt and C. M. Winslow.

Education—Elmer Grey, C. M. Winslow and F. P. Davis.

Public Information—J. E. Allison, R. Germain Hubby and A. C. Martin.

Competitions—John C. Austin, Robert H. Orr and R. D. Johnson.

The meeting was held at the Hoffman Cafe, the following members being present: W. J. Dodd, John Parkinson, R. G. Hubby, Lyman Farwell, August Wackerbarth, Henry F. Withey, J. J. Backus, H. M. Patterson, J. E. Allison, S. Tilden Norton, John P. Krempel, Frank D. Hudson, and A. M. Edelman.

Change Their Architects

Changes of architects seems to be more or less of a fad these days. Recently O'Brien Bros., San Francisco architects, prepared plans for a four-story warehouse at Eddy and Jones streets. A number of contracts were let, when announcement was made that they had been released and that new drawings for a five-story building were being prepared by Mr. Maury Diggs of Oakland. A few days later it was announced that Mr. C. O. Clausen, architect in the Hearst building, was redesigning a four-story factory building for the San Francisco Casket Company. The original plans for this structure were made by Mr. E. A. Garin. The construction has been changed from mill type to reinforced concrete.

Washington State Architects Meet

The twenty-fourth annual meeting of the Washington State Chapter of the American Institute of Architects was held in Seattle in January. It was attended by a number of Chapter members from Spokane, Tacoma and Bellingham. It was by far the largest and most successful annual meeting the Washington State Chapter has ever held.

The morning was given up to a sightseeing trip for the visitors, which included a stop at the University of Washington, where the buildings of the new group were inspected and the plan for future building was explained by Mr. Carl F. Gould, head of the department of architecture and architect of the new group.

After luncheon President D. R. Huntington opened the business session, introducing Mr. Charles H. Bebb, who delivered an address of welcome to the visitors and gave a short historical sketch of the Chapter from its organization in 1894. Mr. G. C. Field, the secretary, then read his annual report, reviewing the Chapter's work for the year.

Mr. George W. Bullard of Tacoma, the first president of the Chapter after the granting of its charter by the American Institute of Architects in 1895, was unanimously elected an honorary associate member.

Two interesting papers were read, the first by Mr. John D. Johnson on "The Relation of the Draftsman to the Architect." Mr. Johnson, being a draftsman and having worked in many of the local architects' offices, gave some very interesting sidelights on the architect as viewed by the draftsman. Mr. Carl F. Gould read the principal paper of the afternoon session, entitled "The Architect and His Education." It was an interesting discussion, in which was brought out the two great conflicting viewpoints, the following of historical precedent or the utter ignoring of it and the creation of a riot of individuality. He indicated the trend of the new education as showing tendencies toward a more rational and greater uniformity of method.

The election of officers resulted as follows: Mr. D. R. Huntington, president; Mr. Carl F. Gould, first vice-president; Mr. George Gove of Tacoma, second vice-president; Mr. Albert Held of Spokane, third vice-president; Mr. Louis Baeder, secretary; Mr. Frank L. Baker, treasurer; Mr. G. C. Field, member of the executive committee, and Messrs. W. R. B. Wilcox and Harlan Thomas, delegates to the American Institute of Architects' National Convention.

An interesting paper by Mr. Ellis F. Lawrence of Portland followed, entitled "The Future of the Architect." He analyzed the forces of commercialism as affecting the architect and the future field of his work.

The president read a telegram from Professor Weaver, head of the department of architecture at the Washington State College, stating his regret of his inability to be present. The president also announced that Mr. W. R. Wilder of the New York Chapter was prevented from being present as he had been injured in an automobile collision.

Mr. James Stephens read a short paper on the idiosyncrasies of the architect, and it proved a comic arraignment of the architect in Mr. Stephens' incomparable style.

Personal

Mr. A. W. Burgren, formerly of Ross & Burgren, architects of San Francisco, is home again after serving for more than a year with the engineers corps in France. Mr. Burgren will resume his architectural practice, but for the present will have his office at his home, 30 Woodland street, San Francisco.

Mr. Walter Reed, who has been in the government service since the beginning of this country's entrance in the world-war, has resumed his architectural practice as senior member of the firm of Reed & Corlett, Oakland Bank of Savings building, Oakland.

Mr. John M. Cooper and Mr. Frank H. Webster of Los Angeles have dissolved the partnership heretofore existing between them. Mr. Cooper will continue the practice of architecture at the present office, 635 Marsh-Strong building.

Mr. C. W. Dickey, architect of Oakland, and Mr. Hart Wood, formerly of Wood & Simpson, are in Honolulu, where Mr. Dickey will let contracts for a $75,000 fireproof country residence.

Mr. Frederick H. Meyer, architect in the Bankers Investment building, San Francisco, has resumed his practice after a severe attack of the influenza.

Mr. D. J. Patterson has moved his architectural offices from the Maskey building to the Hearst building, San Francisco.

Messrs. W. J. Dodd and William Richards, engineers, have moved their offices from the Brockman building to 905 Brack Shops building, Los Angeles.

Mr. John Bakewell, who is engaged in Red Cross work in Paris, is expected to return to San Francisco in the spring.

Mr. Kenneth MacDonald, San Francisco architect, has recovered from a severe attack of the influenza.

Mr. John G. Howard, architect of San Francisco, is engaged in construction work for the Red Cross at Bordeaux.

Mr. F. W. Griffin of Porterville has been appointed instructor of manual training in the Porterville high school.

Mr. Arthur G. Bugbee, architect, has opened offices in the Sharon building, San Francisco.

San Francisco Architectural Club

Many of the members who have been absent from the club the past year are returning from the army and navy, and through the tireless efforts of the secretary, Mr. Fred Munk, who is the head of the club's employment committee, quite a few have secured positions with different firms. Mr. Munk is making a special endeavor to see that all discharged soldiers and sailors are given immediate employment with the architects and engineers.

Interest is being revived to a great extent in the various departments of the S. F. A. C. A new steel and reinforced concrete construction class is about to be organized. This class should be of special interest to all draftsmen, who should avail themselves of the opportunity to take this course of instruction under the tutorship of one of the most prominent engineers on the Pacific Coast.

The Atelier Class of the Beaux Arts Institute will be started at once. This promises to be one of the most successful years of the class, which is now being enrolled.

The purpose of the San Francisco Architectural Club is to offer a thorough education in architecture and its allied arts as will fit its members to successfully pursue their work. It is desired that application for membership be made by all draftsmen in San Francisco and vicinity, as soon as possible, to take advantage of the classes that are soon to be started.

Seattle Church Edifice

Mr. Robert H. Orr, 1301 Van Nuys building, Los Angeles, has been commissioned to prepare plans for a large church edifice to be erected at the corner of Harvard avenue and Spring street, Seattle, Wash., for the First Christian Church of that city. It will cost $100,000. The building will be 110x110 feet and will contain a basement, main floor and gallery. It will be of masonry construction with terra cotta facing. A special apartment for the pastor and a garage are also included in the plans.

Oakland Hospital

The Supervisors of Alameda county have approved the preliminary plans of Mr. Henry H. Meyers, architect of San Francisco, for the new hospital group to be erected at Fourteenth avenue and Vallecito street, East Oakland. Contracts for the buildings will not be awarded until after the excavating and foundations are started. The board will have available before the end of this year $600,000 for the project.

Bids are being invited for three additional units to the County Sanitarium near Livermore at an estimated cost of $125,000.

Oakland Labor Temple

Mr. Maury Diggs, Union Savings Bank Building, Oakland, has completed the preliminary drawings for Oakland's new Labor Temple, to be built at 1728 Broadway, at a cost of $750,000. The building is to cover ground area 150x100, and will be 10 stories, with basement devoted to bowling alleys, swimming tanks and shower baths; stores on the ground floor, auditorium to seat 4000 on the second and third floors, offices on the next five floors and club rooms and gymnasium on the upper floors. A theatre is also proposed.

J. R. Miller Busy

Mr. J. R. Miller, architect in the Lick building, San Francisco, is very optimistic about future building construction in San Francisco and vicinity. Within a couple of weeks Mr. Miller has been commissioned to prepare plans for no less than six different projects, one of which is a $40,000 hospital; another is alterations costing $12,000 to the H. O. Harrison building on Van Ness avenue and another a lodge building at Ingleside for the Olympic Club.

Lodge Buildings

The Vallejo Lodge of Elks will erect a building on the northeast corner of Georgia and Sonoma streets, Vallejo, at a cost of $40,000.

Another lodge building soon to be constructed is a three-story brick structure which the Redmen will build at Richmond. Plans will be prepared by Mr. J. B. Ogborn, architect, 821 Bissell street, Richmond.

Oakland Apartments

Plans are being completed by Mr. Chester H. Miller, Call-Post building, San Francisco, for altering two frame buildings and joining them to a new central unit which will provide Oakland with one of the most up-to-date apartment houses in the bay district. The location, Grand avenue, is an excellent one. Mr. Charles F. Gross is the owner.

$75,000 Country Residence

Mr. J. W. Dolliver, architect in the Royal Insurance building, San Francisco, is preparing plans for a $75,000 country residence for Mr. Myers to be built near Sacramento. Mr. Dolliver also has plans for a one-story factory.

Residence Alterations

Mr. Sam L. Hyman, architect in the Crocker building, has prepared plans for alterations to the former residence of Mr. John A. Britton at Redwood City. Mr. Britton recently sold his home to San Francisco people.

Bank Buildings and Alterations

The First National Bank of Knights Landing is to have a new building costing $10,000, according to Mr. W. W. Hopper, cashier.

Plans have been completed for alterations to the Stockton Savings and Loan Society building by Messrs. Sweetzer & Baldwin, Marsh-Strong building, Los Angeles, and segregated bids are now being taken.

The Bank of Maui at Honolulu, T. H., announces it will erect a new building this year.

Factory and Warehouse

The Holmes Investment Company will build a part one and part three-story reinforced concrete factory and warehouse for the Independent Paper Company at Tenth and Bryant streets from plans by Mr. Mathew O'Brien, architect in the Foxcroft building, San Francisco. The improvements will cost $120,000. Ground area 185x200 will be covered and the building will be equipped with gravity chutes, bins, freight elevator, and will have steel sash, wire glass windows, steel rolling doors, etc.

Designs Nurses' Home

Mr. Geo. T. Colmesnil is the architect of the seven-story reinforced concrete nurses' home for the Affiliated Colleges, Fourth and Parnassus avenues, San Francisco, construction of which has been started by Messrs. MacDonald & Kahn, the owners and managers of construction. By an error it was stated in last month's issue that Mr. A. Lacy Worswick was the architect of this building. Mr. Worswick has nothing whatever to do with the plans.

Architects' Association

Dr. Albert L. Shiels, superintendent of the Los Angeles public schools, addressed the Engineers and Architects Association of Southern California, Friday evening, January 31, on "Bolshevism." Mr. Leroy C. Bishop also spoke and gave a demonstration of the use of the accousticon and the dictograph. The newly elected officers of the association were installed.

Designing Apartments

Mr. Albert Schroepfer, Nevada Bank building, San Francisco, reports he is very busy designing apartment houses and other buildings. One of these will be erected on Sacramento street at an estimated cost of $35,000.

Store Alterations

Messrs. Bliss & Faville have prepared plans for alterations and additions to the store of the Prussia Company, at 139 Geary street, San Francisco.

Bank to Enlarge Quarters

The Anglo London Paris National Bank will enlarge its present building at Sutter and Sansome streets by taking in the property to the north on Sansome street, which has been purchased from the Chilton Estate for $450,000. The property has a frontage on Sansome street of 137 feet. There is at present a two-story building on the property, which probably will be razed and an addition built that will conform with the style of the bank's present granite structure. The existing bank building was designed by the late Mr. Albert Pissis.

New Apartments

Mr. E. E. Young, 251 Kearny street, San Francisco, has completed plans for a two-story frame apartment house to contain four five-room apartments. It will be erected on the east side of Palm avenue, 160 feet north of Geary street, by Mr. P. D. Tyler.

Mr. Young has also made plans for four frame apartment houses to be erected on Arguello boulevard, between Euclid avenue and California street, San Francisco, for Mr. Herman H. Helbush.

$500,000 Hotel for Bakersfield

The Chamber of Commerce and business men of Bakersfield are organizing a company to erect a five- or six-story Class A hotel building on the Tegeler property. The building will cost $500,000. Among those interested in the project are H. J. Brandt, J. W. Heard, George Hay, C. E. Worden, C. C. Stockton, W. E. Underwood, Louis V. Olcese, Mayor C. L. Taylor, Fred W. Tegeler, and others.

$100,000 Taft Hotel

Mr. Thomas B. Wiseman, architect of Bakersfield, is preparing plans for a hotel building to be erected in Taft adjoining the present Anderson Hotel, which will be made an annex. The structure will cost about $100,000. A company to erect the hotel has been incorporated by Mayor W. L. Adkisson. Messrs. Walter Oliver, R. H. Anderson and W. F. Bray.

Court House and Jail

Messrs. Geo. C. Sellon & Co. of Sacramento have been commissioned to prepare plans for a new court house and jail at Quincy, Plumas county, to cost $100,000.

Alterations to Bank Building

The First National Bank of Reedley will make extensive alterations to its building.

Height Limit for Buildings

Mr. George A. Damon, president of the City Planning Association of Los Angeles, has been retained by the city of Long Beach to prepare a comprehensive plan for the future development of that city. Mr. Damon has suggested that the height of buildings be limited to 80 feet. Most of the important cities of the United States have fixed a limit to the height of building and many of them now regret that this limit was not fixed sooner.

Concrete Factory Buildings

Mr. Albert C. Martin, 430 Higgins building, Los Angeles, has completed the plans for the office building portion of the new factory buildings to be erected on Santa Fe avenue near Thirty-seventh street, for the Keystone Iron Works. Bids will be taken at once for the erection of this portion of the buildings. It will be a three-story structure, 100x50 feet.

$85,000 Apartment House

Mr. A. H. Knoll, formerly Falch & Knoll, San Francisco architects, has prepared plans for an $85,000 five-story apartment house to be erected at California and Gough streets, San Francisco, for Mr. M. S. Show. There will be ten apartments of seven rooms each, finished throughout in white enamel, with oak floors, steam heat, hot water and electric passenger elevator service.

The State Building

A dispatch from Sacramento says that every effort is being put forth by the State Board of Control and State Architect Geo. B. McDougall to begin work on the State building in the San Francisco Civic Center. Mr. McDougall said: "The problem is how to construct a building to cost more than $1,200,000 with $1,000,000 available from the sale of bonds."

Twelve-Story Hotel

Mr. Harrison Albright, 553 Laughlin building, Los Angeles, has prepared plans for a twelve-story Class A hotel to be erected on West Sixth street, near Westlake Park, for Mr. Theodore Curtis. It will contain approximately 1000 rooms. The building will be 250x175 feet and will be of reinforced concrete construction.

$20,000 Country Residence

Messrs. Bakewell & Brown, 251 Kearny street, San Francisco, are preparing plans for a $20,000 country house to be built at Pebble Beach, near Monterey, for Mr. Charles Clark of San Mateo. Mr. Bakewell, who is in France, is expected home the latter part of May or early in June.

Personal

Announcement is made of the incorporation on January 1st of Rossel Edward Mitchell & Company, Ltd., architects, engineers and town planners, with the following personnel: Mr. Rossel Edward Mitchell, president; Mr. Gilbert Stanley Underwood, vice-president; Mr. Barnard Stebbins Alves, manager. The firm's main office is at 604-608 Paul-Gale-Greenwood building, Norfolk, Virginia. Mr. Underwood is well known to Californians, having for many years been associated with Mr. Arthur B. Benton of Los Angeles.

Mr. S. Heiman, architect, having been discharged from the Tank Corps, U. S. Army, has reopened his offices at 57 Post street, Mechanics Institute building, San Francisco, where he will be pleased to receive catalogues, etc.

Plans for Monastery

Mr. Louis C. Mullgardt, architect in the Chronicle building, San Francisco, has prepared preliminary plans for a group of structures for the Monastery of the Visitation of the Blessed Virgin Mary. The buildings will occupy a secluded but picturesque site in the Piedmont Hills back of Oakland, and will be of monolithic construction, with Spanish tile roof, metal grill windows, tile and marble floors and cellular block tile partitions. The project will probably involve an expenditure of $500,000 or more.

Chapter May Have New Quarters

San Francisco Chapter, A. I. A., has decided to take permanent quarters in rooms provided by the Building Material Exhibit at 77 O'Farrell street, provided the San Francisco Architectural Club will also make its headquarters there, giving up its rooms on Post street.

$1,000,000 Post Office Building

Representative Elston has introduced a bill in the House providing for an appropriation of $1,000,000 for a new post office building to be erected in Oakland as soon as plans can be prepared by the Supervising Architect, Washington, D. C.

Plan New Houses

Mr. E. J. Symmes, 1700 Pearl street, Alameda, is preparing plans for twenty-five frame cottages and two $10,000 residences to be built in Oakland.

$35,000 School Building

Mr. Chester Cole of Chico is preparing plans for a $35,000 two-story frame and stucco school house for the Durham school district.

Elks' Building, Bakersfield

The Elks will raise $100,000 for a new lodge building to be erected on Seventeenth street, Bakersfield.

Architects Will Design Now; Take Pay Later

Building operations in and around Pittsburgh have thus far shown very slight signs of reviving, since the Government ban against miscellaneous construction was lifted several weeks ago. Nor are there any pronounced evidences of work being planned by local architects. Some report inquiries from people who contemplate building this spring, but few plans are being ordered, and architects seem to have plenty of leisure. It is because of the spare time they have that they are urging people, who contemplate building, to order plans and specifications prepared now.

Architects point out that if the general inclination is to delay construction until after winter is past, it will be best to have the proposed buildings designed in plenty of time. Many dwellings are not what they were expected to be because enough time was not given to perfecting their planning. When a building is designed and enough time is afforded for careful study of the plans, many changes may be thought wise which cannot be made when the plans are completed only a few days or a few weeks before they are to be utilized. Besides, when architects are busy they have so much to look after and to think about that they cannot give each job as much attention and thought as when they are not rushed with work. They are certainly not rushed now, and at a recent conference many Pittsburgh architects are said to have agreed that those who think to build next spring can have plans prepared now, or during the winter months, with no charge to be made for the plans until they are used. In this way architects can be kept busy until the spring building season arrives, and when it comes those who have their plans ready will have an advantage over those who do not order plans drawn until a few weeks before they begin to build.

As matters are now, architects will have no trouble in securing all the draftsmen they may need, but should a building rush set in later they may be unable to get plans out as quickly and as satisfactorily as they can now—National Builder.

School Construction Should Go On

Contracts for 800 public school houses, totaling some eighty million dollars, have been held up as a result of the war, according to but a partial tabulation of building conditions throughout the United States, which has been made by the Statistical Section of the Division of Public Works and Construction Development, U. S. Department of Labor. It is estimated that the completed tabulation will show that these school projects, now being held in abeyance, aggregate more than one hundred million dollars.

In round numbers, this is about one dollar per capita throughout the United States. As school buildings are customarily financed on twenty-year serial bonds, this means an installment payment of about five cents per capita per year by the people of this country, if they would have their school programme put through at the present time.

Assuming that a decrease of 20 per cent in construction costs might develop during the next four or five years (and this is regarded by many as a maximum decrease), the immediate completion of the nation's school programme would involve an excess of only 1 per cent per capita per year over the per capita cost, even if construction were delayed for several years.

The educators of the country ask, shall the country have its schools now at five cents per capita per year, or delay having them for four or five years in order to buy them at four cents per capita per year?

States Can Use 103,000 Soldiers and Sailors on Road Work

The Bureau of Public Roads of the U. S. Department of Agriculture has collected from the highway departments of the various States figures indicating the probable number of returned soldiers and sailors that can be used during 1919 in road construction and repair work. Of the 38 States replying only 29 gave definite figures. They report they can use 11,637 soldiers and sailors as skilled laborers, and 91,904 as unskilled. Under the head of skilled labor the State highway departments were asked to report on the requirements of masons, carpenters, quarry bosses, concrete finishers, road foremen, roller men and superintendents. Unskilled laborers were not separated into classes.

The States that have thus far given definite figures, with the estimated number of men that may be used, are:

	Skilled	Unskilled
Alabama	60	1,000
Arizona	48	100
Colorado	...	1,250
Delaware	100	1,000
Connecticut	...	*7,000
Florida	685	4,315
Georgia	...	*4,000
Idaho	...	200
Illinois	2,500	15,000
Kansas	1,000	4,800
Kentucky	826	3,500
Louisiana	110	1,000
Maine	100	1,000
Massachusetts	150	2,000
Michigan	200	2,500
Minnesota	1,200	4,800
Mississippi	...	*2,000
Montana	104	644
Nebraska	267	2,250
Nevada	35	265
New Hampshire	332	1,000
New York	1,400	7,000
Oregon	270	2,430
Rhode Island	50	450
South Carolina	...	1,500
Virginia	900	5,100
Washington	...	*2,000
West Virginia	700	9,300
Wisconsin	600	7,500

*Skilled and unskilled.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

New Chapter of Engineers

San Francisco members of the American Association of Engineers met recently in the office of Mr. George M. Nelson, 810 Bank of Italy Building, to perfect organization of a local chapter and discuss means to extend the influence of the organization and institute a vigorous campaign for new members.

Some thirty invitations were sent out and the following members and applicants responded: Mr. L. D. Howland, Mr. I. G. Grundel, Mr. A. G. Mott, Mr. H. B. Watkins, Mr. W. H. Phelps, Mr. J. H. Knowles, Mr. George M. Nelson, Mr. H. A. Scholten, Mr. T. R. Plant, Mr. W. H. Rupp, all members; Mr. O. R. West, Mr. T. H. Brown, Mr. N. A. Wood, Mr. J. L. Pixley, Mr. E. V. Vandercook, Mr. K. H. Mead, all applicants.

Mr. J. H. Knowles, Assistant Chief Engineer of the Western Pacific Railroad, called the meeting to order and was unanimously elected temporary chairman, and Mr. A. G. Mott was elected temporary secretary and treasurer.

A plan of activities was discussed and it was decided that the matter of getting new members be given first consideration by all present for the next few months.

A petition to the National Board of Directors in Chicago for a charter for the chapter was drawn up and signed by all members present.

The officers of the National Association of Engineers, whose headquarters are at 29 S. La Salle street, Chicago, are Mr. W. H. Finley, President Chicago & Northwestern Railroad, President; Mr. H. W. Clausen, Chicago, First Vice-President; Mr. L. K. Sherman, President L. K. Sherman Engineering Co., Second Vice-President; Mr. C. E. Drayer, Secretary; Mr. A. H. Krom, Assistant Secretary; Mr. F. H. Myers, Assistant Secretary; Mr. John Ericson, City Engineer, Chicago, Treasurer.

The American Association of Engineers was organized by a group of Chicago engineers early in 1915. On June 14 of that year it was incorporated (but not for pecuniary profit) under the laws of the State of Illinois.

To Bridge the Golden Gate

State Senator Burnett has introduced a resolution at Sacramento asking the Federal Government to provide for a preliminary survey to determine the feasability of building a bridge across the Golden Gate near Seal Rocks. The bridge would prove of considerable advantage to ranch owners and other residents of Marin, Sonoma and Napa counties.

The amount of money derived from the Northwestern Pacific Railroad for operating their line over the bridge, would more than pay interest on the investment, it is said.

Engineers say the bridge would need be only 5000 feet long, making the center span 3000 feet and the two end spans 1000 feet each. It has been figured that the bridge could be built for about $6,000,000.

Mr. Hoover and the Engineer

Aside from President Wilson no American has been so widely advertised by his acts during the war as Herbert C. Hoover. Known only as a mining engineer prior to the war, Mr. Hoover has abundantly proved his right to be called a truly great executive, so great, in fact, that his name has frequently been suggested as fit to be enrolled as a successor to President Wilson himself.

In acknowledging his recent election to the Itaiian Royal Academy of Science, President Wilson said: "While perhaps there is no science of government, there ought to be." Had Mr. Hoover been speaking, instead of the President, we believe he would not have said that "there is no science of government," for to the modern engineer every sort of administration involves the application of science. Listen to what Mr. Hoover wrote not long ago:

"The engineering profession generally rises yearly in dignity and importance as the rest of the world learns more of where the real brains of industrial progress are. The time will come when people will ask, not who paid for a thing, but who built it. To the engineer falls the work of creating from the dry bones of scientific fact the living body of industry. It is he whose intellect and direction bring to the world the comforts and necessities of daily use. Unlike the doctor, his is not the constant struggle to save the weak. Unlike the soldier, destruction is not his prime function. Unlike the lawyer, quarrels are not his daily bread. Engineering is the profession of creation and of construction, of stimulation of human effort and accomplishment." — Engineering and Contracting.

Merced County's Road Building Programme

Approximately 125 miles of highway are embraced in the system of roads which are to be improved under the $1,250,000 bond issue recently voted by the inhabitants of Merced county. This total includes 18.8 miles of State aid roads, being a portion of the State highway lateral which will extend westward through Los Banos into Santa Clara county.

One of the improved roads will extend north and south through the city of Merced, the northern portion passing through Nair, Edendale, Hopeton and Merced Falls on the route to Yosemite National Park. An improved highway to Yosemite has long been desired by the people of Merced county and it will also be appreciated by the people of the entire southern portion of the State.

All the highway will be of concrete and the work will be done under the direct supervision of County Surveyor A. E. Cowell.

Has $500,000 in New Work

Mr. Maurice C. Couchot, constructing engineer in the French Bank building, San Francisco, is preparing plans for a large reinforced concrete elevator and flour mill to be erected at Ogden, Utah, for the Sperry Flour Company. The buildings will represent an outlay in excess of $300,000. Mr. Couchot also has made plans for a cafeteria and laboratory for the National Carbon Company, San Francisco, and for a concrete warehouse and office building in Honolulu for the Sperry Flour Company.

K. E. Parker Has Big Contract

Mr. K. E. Parker, construction engineer, has moved his offices from 244 Kearny street, to the fifth floor of the Clunie building, San Francisco. Mr. Parker has a large force at work building a five-story reinforced concrete store-house for the U. S. Government at Mare Island.

Passing of Mr. Fred T. Huddart

The building industry of San Francisco has lost an esteemed member in the death of Mr. Frederick Townsend Huddart, which occurred January 12 after a lingering illness. Mr. Huddart was a member of the firm of Woods, Huddart & Gunn, well known engineers and contractors of reinforcing steel bars and pig iron. Until his health failed him, Mr. Huddart was one of San Francisco's most active business men. He enjoyed a wide acquaintance and a friendship among men which will not soon be forgotten.

Mr. Huddart was well known in the iron and steel trade of the Pacific Coast since boyhood, having been for many years associated with the firm of Dunham, Carrigan & Hayden and later with Mr. W. B. Isaacs of the Carnegie Steel Company.

Mr. Huddart was born in San Francisco in April, 1864. He was the son of Rev. Robert Townsend Huddart.

Big Reclamation Project

Mr. C. Harold Hopkins of Woodland, manager of the Conway Ranch and whose offices are in the Porter Building, Woodland, has plans for a big reclamation project which will involve an expenditure of close to $1,000,000. The management plans four bases of operation, each with an area of 5000 acres. Community centers will be established at each base and construction work will include dormitories, dining halls, club and reading rooms, bath houses and four and five-room cottages.

Take Contract on Percentage

Messrs. Palmer & Peterson, contractors and engineers in the Monadnock building, San Francisco, have secured a $200,000 contract on percentage to construct new buildings and additions for Libby, McNeill & Libby at Sacramento, from plans by Mr. Washington J. Miller, architect of San Francisco.

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Arizona Highway Programme

The Arizona Highway Association, which met at Phoenix recently, adopted a resolution asking the Legislature to submit to the voters of the State at the earliest practicable time a proposition to issue $30,000,000 bonds for the construction of a system of permanent State highways, and that provision be made to issue such bonds only as they may be required to carry on the work. A resolution was also adopted endorsing the bill now pending before the Legislature of Arizona, providing for an amendment to the State constitution, raising the limit of bonded indebtedness from one to five per cent, which will be necessary if $30,000,000 bonds are voted.

Appointment of a State highway commission, to consist of five members serving without pay, was also recommended by the association.

One of the strong arguments advanced in favor of a liberal program of State highway construction was the tremendous development that has resulted in California through the building of permanent State and county roads. The possibilities of development in Arizona by good roads were declared to be far ahead of those in California.

Engineers' Club Annual Meeting

The Engineers' Club, Seattle, held its annual meeting on the evening of January 11 at the clubrooms, Arctic building. At this meeting the result of the election held on January 10 was announced. The following officers were chosen for the ensuing year: Mr. H. E. Horrocks, president; Mr. L. M. Grant, vice-president; Mr. E. J. Bartells, secretary; Mr. Amos Slater, treasurer. The executive board consists of Messrs. J. F. Pinson, R. S. Drury and Stuart Mannell.

Personal

Mr. Davenport Bromfield, former city engineer of San Mateo and county surveyor of San Mateo county, has opened offices in the Atlas building, Second and Mission streets, San Francisco.

Engineer Brings Suit

Mr. W. E. Pedley, construction engineer of Riverside, and his wife, Mrs. Elizabeth Pedley, have brought suit against the Consolidated Reservoir Power Company of Los Angeles, for $35,000. Pedley avers he was employed by the defendant as confidential consulting and construction engineer. When differences arose between them in 1913 he presented a bill for $40,000 for services. Mr. Pedley claims the company offered lands bordering on Lake Elsinore in settlement of his claim and he accepted a deed for the same, which was made to his wife. Mr. Pedley says he did not inspect the lands until after the flood of 1916, when Lake Elsinore broke its bounds, and he claims to have discovered at that time that the company owned only a part of the lands which had been deeded to his wife. He now sues to recover $35,000, the alleged value of about 3425 acres involved in the transfer, to which he now claims he has no title.

New Tank and Pipe Company

A new plant to engage in the manufacture of steel pipe and tanks has been established in the industrial district in the southeast section of Los Angeles. It will operate under the name of the Union Tank & Pipe Company, which filed articles of incorporation recently with $100,000 capital stock. The incorporators are Morgan L. Sweeney, who was for a number of years superintendent for the Western Pipe & Steel Company, and who will be manager of the new plant; Edward J. Bowen and Stuart M. Salisbury.

Every Man His Own Architect

Mr. Kenneth Macdonald, architect of San Francisco, mailed his friends a unique holiday card not dissimilar to one printed some years ago by an insurance company and entitled: "Every Man His Own Architect." The point emphasized on the chart is that every man is the builder of his own fortune.

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The Contractor

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Getting on With the Architect

HOW do you get on with the architect or the engineer on your jobs? Smoothly or by jerks?

Getting on with the architect or engineer has been the making of a mighty lot of contractors—and not getting on has been the breaking of a lot of others, says Contractor's Atlas.

The engineer and architect have also absolute power on a job and the question of getting along smoothly and harmoniously with them is well worth the most careful consideration. Do not allow yourself to be comforted with the thought that "nobody could get along with such a man as that, anyway."

One contractor says this and concludes that there is no use trying. He works on at loggerheads with the architect. Misunderstandings arise and costly changes have to be made. The architect naturally shows no sympathy for such a contractor. When he is through, the contractor swears he will never do another job under that architect, and generally leaves without any profit.

Another contractor who has learned that courteous diplomacy and bona fide co-operation with the architect or engineer actually pays well in dollars as well as in satisfaction, if need be, makes himself agreeable, and in a short time he is on the most friendly terms with the architect. The job runs along smoothly and brings in a good, fair profit.

Unfortunately, this relation has often been considered simply one of personalities. Really it should be as much a matter of business with the contractor to get along smoothly with the architect and engineer as for him to be agreeable to the owner. Bringing this right down to a matter of dollars and cents will perhaps bring this home.

One contractor began in a very small way and in the face of the competition of four or five well-established contracting firms already holding the territory. Everyone predicted he would have hard sledding.

He had had little or no experience. But this was perhaps what put him on the right track. Realizing his inexperience, he got into the habit, when the engineer came on the job, of calling his foreman over and asking the engineer to explain just how he wanted the work done.

This was a new attitude to the engineer and he couldn't help but be pleased by it. The contractor was a gruff sort, but was frank and open. After such an interview he would tell his man, "Now you go and do just like he tells you."

You can't expect an archtect to be watching out for your interests when he feels that you are bucking him at every turn. Having regard for your interests doesn't mean his accepting inferior work on your part. You know an architect can get equally good results from having work done in a way convenient for you, is in some particular way that he may seem to be a crank about.

Your aim is to get him to do this, and the way to do it is to make him feel that you have his interests at heart, that you are just as much interested in getting the job done according to specifications and the way he designed it as he is. In short, you will have to pull in harness with him.

This contractor that we were talking about now heads the list in the community. He has the biggest equipment and handles the biggest jobs.

But this is not the main point. He gets them at his own price, and he gets all the big cost plus percentage jobs. The other contractors of the town stand back and say, "I don't see how he gets away with it." But to this day, when the engineer comes on the job, this contractor calls over his foreman and says, "Now you tell John how you want this done." And when the engineer is through he tells his foreman, "Now you go and do just like he tells you."

Some Things the Contractor Often Overlooks

By WM. F. HILDMAN

UNTIL a short time ago overhead expense was something that the average business man thought he need not know anything about, and there are few lines of business that have not suffered at some time from the ravages of this unrecognized messenger of gloom.

When estimating on concrete highways it is proper to give attention to unexpected costs with which every job is more or less burdened. Let's start at the beginning and work through. Perhaps we can find some of the oversights that are frequently responsible for our coming out at the small end of the horn when the job is finished.

With the contract in your pocket, bond filed to cover, have you figured the interest on cost of check and cost of bond?

You ship machinery somewhere near the starting point of the job and when you expect it to arrive, your superintendent and a couple of your regular men are there waiting for it. Railroad fare, board and room, and freight bills start at this time.

The equipment arrives—some part is broken or damaged in transit. Another delay until either the local blacksmith can make the necessary repairs or new parts may be brought from somewhere in America—with cost of board and room and other expensive elements going on as usual.

Next is either a camping outfit or some means of conveyance to get men back and forth from the job. Oil, gasoline, tire, and many kinds of repair expenses are, among other things, in order. A night watchman, a man at the pumping house to keep the water coming through the roller or mixer have to be considered.

Telephone bills are incurred daily to keep material coming. Few days of rainy weather are scattered here and there throughout the period of the job. Roads are muddy, demurrage puts a blot on the profit side of the ledger. Either these, or no material at all, and regular men of the crew drawing their salary in the meantime.

Just as you are getting a good start, something happens with some part of the mechanical equipment. Flues commence to leak, possibly because of the quality of water you had to use. As there is no chance to send the gang home, you start in to work on the shoulders. Progress is slow, however, for most concreting gangs do not like building road shoulders, and as the concrete laid will not permit use of a wheeler or scraper, you are up against it.

About this time the party owning a water hole, from which you are getting your supply, wants pay for the water with chances that he wants as much for it as you are expecting in profit on the job. Never use a farmer's well until you have made a written agreement covering its use, knowing whether or not it is going to cost you something and how much.

Then there are those numerous things that can be grouped in no other way than by calling them incidentals. They all show up on every job and they all cost money.

We have depreciation, too. Isn't it a fact that we fool ourselves on this very important question? There seems to be a very large difference of opinion among road builders as to the amount to be charged for depreciation of road-building machinery and this is one of the real reasons why many contractors lose out financially in concrete road building.

Another important item that must not be overlooked is interest on balance held over from fall to spring on incomplete jobs. This is a very important expense for a contractor with limited capital.

The foregoing are merely a few reminders. Nevertheless, they are sure to be on almost every job. Are you sure that every time you bid you give them proper consideration?—Contract Record.

General Versus Segregated Contracts

Mr. John Morrell, a Minneapolis architect, has addressed a communication to the Improvement Bulletin of that city, in which he discusses that always discussable subject "General Contracts versus Separate Contracts," and gives a preponderance of argument in favor of the segregated bid. To quote Mr. Morrell:

"I read with interest the article in a recent issue of the Bulletin on 'Lowering Construction Costs,' in which the writer's only hope is in the general contractor, and the cost plus contracts.

"The architects certainly made a great mistake and lost a grand opportunity a few years ago when they began to let the entire work of a building to one general contractor, instead of letting each part of the work separate; he only has a fraction of influence and standing in the community today he otherwise would have had, and it is doubtful if that opportunity will ever come his way again. This war has certainly revealed to him his present position, for it was to the general contractor, and not the architect, that the Government turned to assist in this great struggle.

"This is the age of specializing. Why should not this be applied to building contracting? Let a carpenter contractor devote his whole attention and skill to carpentry, and develop that industry to the highest point of efficiency. The same might be said in regard to all the different branches of the building industry, for this in my opinion, would lower the cost of building construction more than anything else. Take the work on the average building, and compare it with the modern factory, in its efficiency, and this will reveal to you the principal cause why building operation is so high in price.

"As to buying power: I fail to see any reason why a general contractor can buy cheaper than contractors specializing in their own branches, other things being equal, and especially if letting contracts separately became the general practice, so that each contractor would have his share of the profits and not let the largest share of the profits go to the general contractor, who in many cases is simply a broker, and has to depend upon the skill of the subcontractors.

"I do not believe that it is generally true that sub-contractors prefer to fig-

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ure with general contractors rather than with the architects; we certainly have not found it so in our practice, and we would consider it a reflection on us if it were so. Why should not a contractor deal and figure directly with the owner through the architect? It would raise him to a more self-respecting position, and he would take greater pride in his work. By this method the architect could select contractors that he knows do honest work, and are competent. And by this method the owner could take advantage of the lowest legitimate figures on the different branches of the work, and thus save the profits of the middlemen.

"It is true that letting the work out to separate contractors adds to the work and responsibility of the architect and it is through shirking this that the present condition has been brought about.

"Now we are approaching the time for every architect to act, both as individuals and through their associations, to bring themselves to a position they are entitled to, and which has been rapidly slipping away from them. They certainly would have the support of the genuine contractors. Unless such action is taken, both architects and contractors will soon be working for a salary, for the broker, or so-called general contractor, to the injury of both and all that is fine and noble in architecture.

"As to structural design: Any architect that is worthy of the name would study as carefully economy in structural design, taking into account materials available, with careful calculation as to spacing to suit the materials and the purpose for which the building is to be used, dead and live loads, etc., as he would in the artistic design of the building, and if this is not true of architects in general, the sooner they apply themselves to this task the better for all concerned.

"There is before the architectural profession a grand opportunity, but it is also a tremendous task, and far too much for one man, 'whose days are few and full of evil,' to hope to accomplish alone. The only hope is in specializing and organizing."

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Joost Bros., Inc., 1050 Market street, San Francisco, who conduct one of the largest and best equipped retail hardware establishments in San Francisco, have no branch stores, an impression to the contrary notwithstanding. All the business of the firm is handled from the Market street office and salesrooms. Joost Bros. are exclusive agents for the well-known Russell & Erwin builders' hardware (Russwin) and they have a large stock for immediate delivery. The firm also carries an up-to-date assortment of sporting goods, including fishing tackle, guns, etc., besides a stock of paints, mechanics' tools and Mazda lamps and electrical equipment.

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Unique in hardwood is the General Hardwood List just issued by White Brothers, the pioneer firm of San Francisco. This booklet, which is No. 8 of their lists, contains 48 pages replete with hardwood information and is the most complete handbook on hardwoods ever issued.

In addition to prices and the quantities of the many kinds of lumber on hand, it gives various log, lumber and panel tables, weights of hardwoods, panels and flooring, as well as a general and concise description of all the hardwoods sold on the Pacific Coast, with their distinctive qualities and the uses to which they are generally put. It also cites examples of hardwood finish in San Francisco store windows, office buildings and hotels. This data is of great interest to architects, builders and the general public. The prospective home builders will find in this handbook suggestions for the effective use of hardwoods in the various parts of the home.

Taking it altogether, the hardwood information in this booklet is most complete and White Brothers are to be highly complimented on their valuable publication.

Upon request, White Brothers will be very glad to supply to anyone, free of expense, copies of their General Hardwood List No. 8.

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The Ideal Heating and Engineering Company, 192 Erie street, San Francisco, anticipate an exceptionally busy year. The company did a very good business in 1918 in spite of war conditions. One of its best heating installations was the Healdsburg school, designed by Mr. Wm. H. Weeks.

The Ideal Company is the patentee and sole manufacturer of the Ideal air washer, cooling and humidifying apparatus, Mr. George C. Derby, manager of the company, being inventor of the washer. The contrivance is designed to be placed between the fresh air intake and the fan so that all air entering the building must pass through the washer and be thoroughly cleaned and humidified to the proper degree before being distributed through the building by the fan.

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Stockton—Hotel Clark.

Sacramento—Farmers & Mechanics Bank, Scottish Rite Cathedral.

Healdsburg—High School.

Corning, Cal.—Bank of Corning.

Selma, Cal.—Sager building.

Modesto, Cal.—Modesto Theatre.

Los Angeles—Trinity Auditorium, Rosslyn Hotel, Boyle Heights School, Corona Grammar School, State Normal School, Science Building, Manual Training building, Kindergarten, Administration building, Library, Gymnasium, Domestic Science, Fine Arts building.

Phoenix, Ariz.—Catholic Church, Mesa Grammar School.

Yuma, Ariz.—New High School.

Fresno, Cal.—White Theatre, First Christian Church, First Church C. S.

Alameda, Cal.—Porter School.

Great Western Supply Company

The Great Western Supply Company, which commenced operations about a year ago on First street, near Mission, is now located in larger and more convenient quarters at 549 Howard street, San Francisco. Mr. Harry Levitt is manager of the company, which carries in stock the well-known Jenkins & Penberthy valves. As agents of the Detroit steam trap, Metric Packing Company and Monarch Metal Company, more than $100,000 worth of business was handled the first year of the company's existence. Mr. Levitt was formerly with the California Steam and Plumbing Supply Company.

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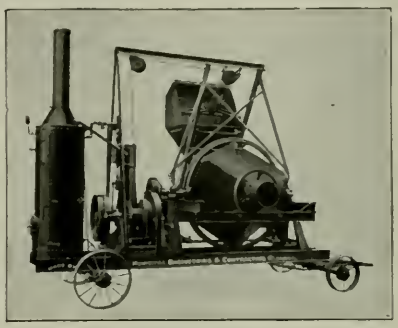

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Yours very truly,
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The Jarvis factory and general offices are at 275 Connecticut street, San Francisco. Mr. W. A. Blair is president of the company and Mr. Elwood Jarvis is vice-president.

Barstow School Building

Mr. Norman F. Marsh, 211 Broadway Central building, Los Angeles, is completing plans for a high school building to be erected at Barstow. It will be a one-story and basement structure, the main section being 127x58 feet, with a wing 56x42 feet, for an auditorium and gymnasium. The cost will be about $35,000.

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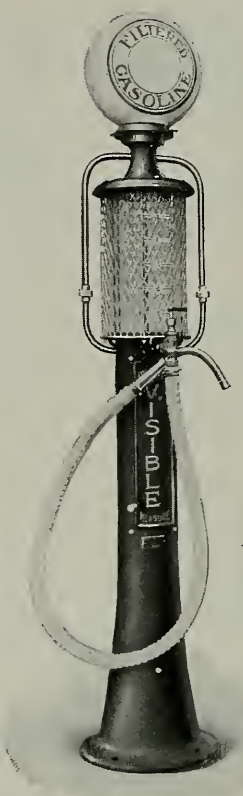

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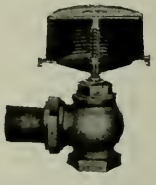

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Portland Architecture

Mrs. E. H. McCollister of 488 Harrison street, Portland, Oregon, won first prize in both main contests conducted by Oregon chapter of the American Institute of Architects, and also selected 10 out of 15 of the prize winning examples of architecture picked by the jury as the best types of architecture, landscape architecture and public sculpture in the city of Portland and vicinity.

In the special competition for the best small houses in Portland the following selections were made by a jury, composed of Dr. George Rebec, University of Oregon; Miss Anna B. Crocker, Portland Art Association; Mr. Charles H. Cheney, San Francisco; Mr. Arthur Lovelace, Seattle, and Mr. Lee Thomas of Bend, Oregon.

First prize, $20 cash, Portland Housing Company, Mrs. E. H. McCollister; second prize, $7.50 candelabra, Powers Furniture Company, L. Hayes, 925 Gantenbein avenue; third prize, $7 merchandise, Morrison Electric Company, Miss Indus Oxer, 395 Twelfth street. In the adults' competition, the same subject, the winners were: First prize, $25 cash, Oregon chapter, American Institute of Architects, Mrs. McCollister; second prize, $15 art books, J. K. Gill Company, L. Hayes; third prize, $12.50 merchandise, H. Liebes Company, Mrs. Edwin Caswell, 791 Overton street; fourth prize, $10 shrubbery stock, J. B. Pilkington Company, Mrs. A. C. Emmons; fifth prize, $7 merchandise, J. C. English Company, Mrs. Chester Cirslinski, 9516 Fifty-fifth avenue Southeast; sixth prize, $5 art books, J. K. Gill Company, Miss Indus Oxer.

The prize winning buildings will be illustrated in The Architect and Engineer for March.

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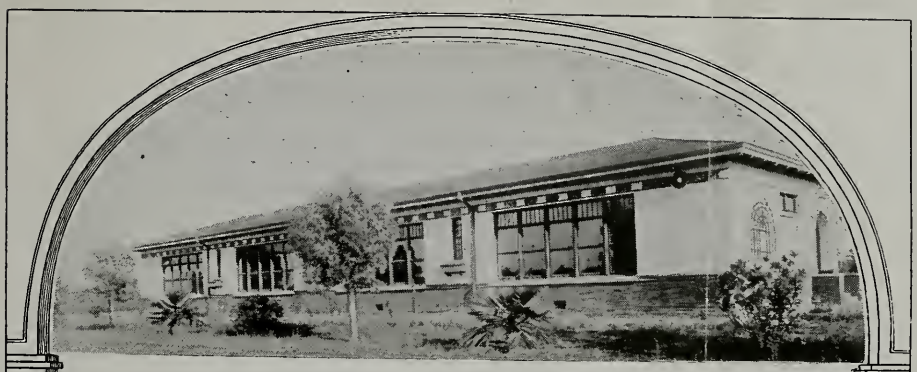

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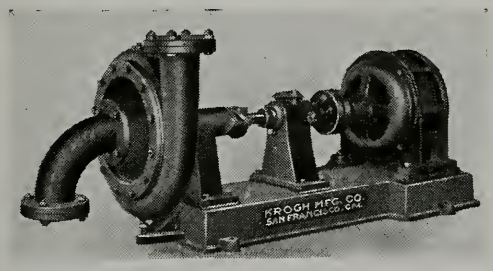

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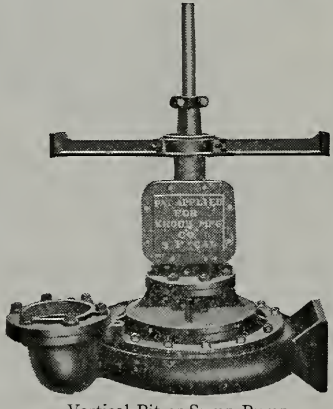

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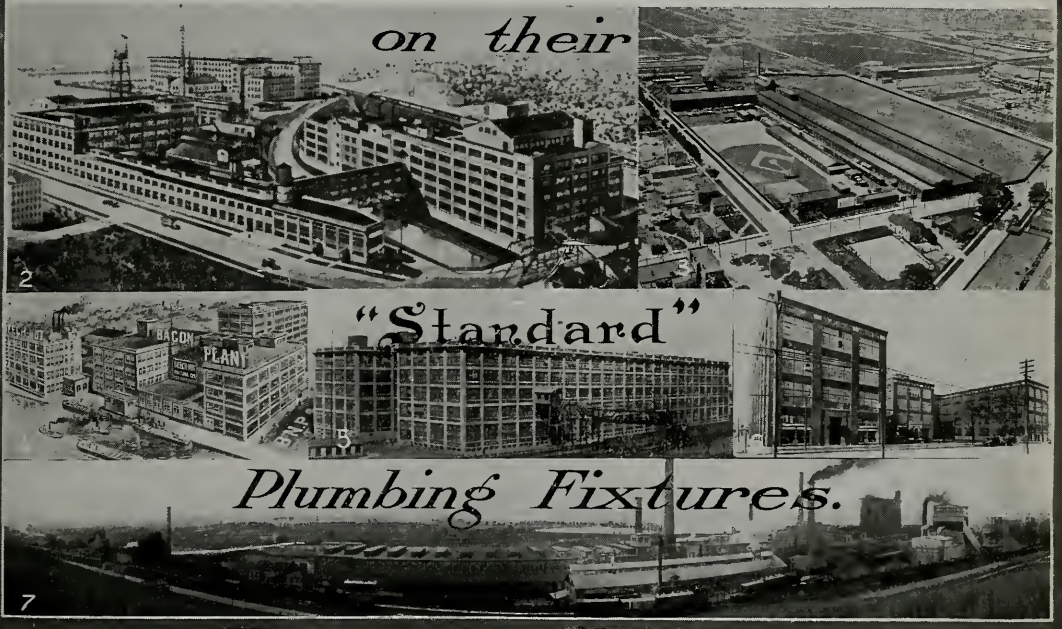

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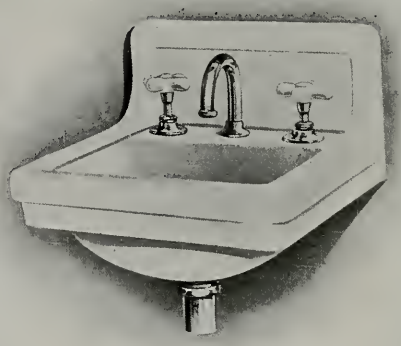

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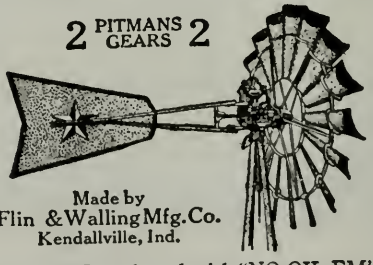

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Architects' Specification Index

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Gladding, McBean & Company, Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Company and United Materials Company, Crossley Building, San Francisco.
Livermore Fire Brick Works, Livermore, Cal.

ASBESTOS ROOFING, PACKING, ETC.
Aspromet Co., Hobart Bldg., San Francisco.
H. W. Johns-Manville Co., San Francisco, Los Angeles and Portland, Ore.

AUTOMATIC SPRINKLERS
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

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Fink & Schindler, 218 13th St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Home Mfg. Co., 543 Brannan St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.

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Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

BELTING AND PACKING
New York Belting and Packing Company, 519 Mission St., San Francisco.

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C. F. Weber & Co., 985 Market St., San Francisco, Los Angeles and Reno, Nevada.
Beaver Blackboards and Greenboards, Rucker-Fuller Desk Company, Coast agents, 677 Mission St., San Francisco; also Oakland and Los Angeles.

BOILERS
Franklin Water Tube Boiler, General Machinery and Supply Co., 39 Stevenson St., San Francisco.
Kewanee Water Supply System, Simonds Machinery Co., 117 New Montgomery St., San Francisco.

BONDS FOR CONTRACTORS
J. T. Costello Co., 333 Pine St., San Francisco.
Bonding Company of America, Kohl Bldg., San Francisco.
Contractors Mutual Liability Insurance Co., Mills Bldg., San Francisco.
Globe Indemnity Co., 120 Leidesdorff St., San Francisco.

BONDS FOR CONTRACTORS (Continued)
Fidelity & Casualty Co. of New York, Merchants Exchange Bldg., San Francisco.
Fidelity & Deposit Co. of Maryland,, Insurance Exchange, San Francisco.
John H. Robertson, successor to Robertson & Hall, 621 First National Bank Building, San Francisco.

BOOK BINDERS AND PRINTERS
Hicks-Judd Company, 51-65 First St., San Francisco.

BRASS GOODS, CASTINGS, ETC.
H. Mueller Manufacturing Co., 635 Mission St., San Francisco.

BRICK—PRESSED, PAVING, ETC.
California Brick Company, Niles, Cal.
Livermore Fire Brick Works, Niles, Cal.
Gladding, McBean & Company, Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
United Materials Co., Crossley Bldg., San Francisco.

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Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
The Paraffine Companies, Inc., 34 First St., San Francisco.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.

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Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.

BUILDERS' HARDWARE
Bennett Bros., agents for Sargent Hardware, 514 Market St., San Francisco.
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree & Co.

BUILDING MATERIAL, SUPPLIES, ETC.
Pacific Building Materials Co., Underwood Bldg., San Francisco.
Waterhouse-Wilcox Co., 523 Market St., San Francisco.

CABINET MAKERS
Home Manufacturing Company, 543 Brannan St., San Francisco.
Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.

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Telephone SUTTER 180

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Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market street, San Francisco.
Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH

Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

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Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT GUN

Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL

Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS

W. E. Mushet Co., 502 Mission St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS

T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS

United Electric Co., Canton, O., mfr, of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.

CONCRETE CONSTRUCTION

Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.

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Twisted Bars. Sold by Woods, Huddart & Gunn, 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
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Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
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R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
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Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.

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Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Mauerene," sold by Imperial Co., Monadnock Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.

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Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

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Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

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Butte Engineering Co., 530 Folsom St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Geo. A. Sittman, 21 Beale St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
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Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

FANS AND BLOWERS

John Ringius, 252 Townsend St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE

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S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES

Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC

General Fire Extinguisher Company, 453 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

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Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent, Crossley Building, San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Grant Gravel Company, 603 Flatiron Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.
Oak Flooring Manufacturers' Association, 1014 Ashland Block, Chicago.

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Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
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James & Drucker, 450 Hayes St., San Francisco.
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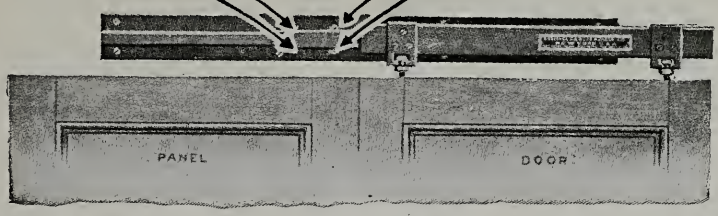

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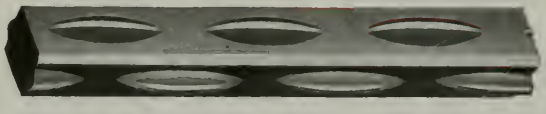

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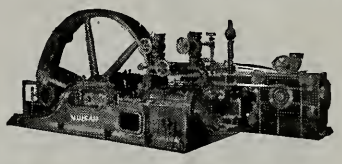

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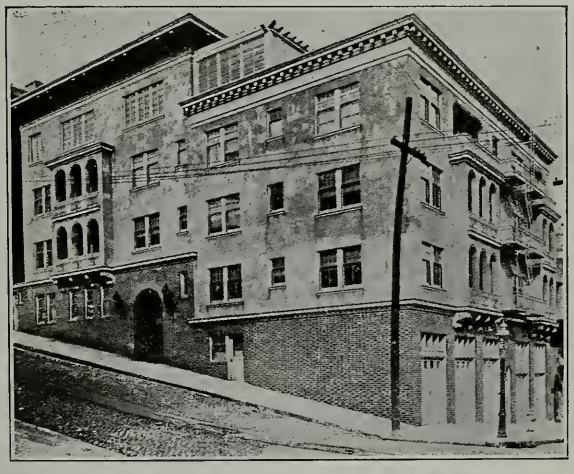

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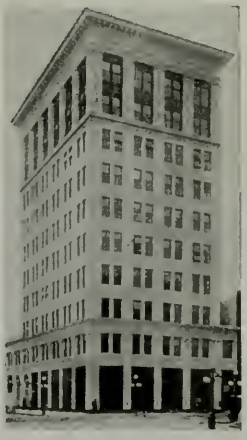

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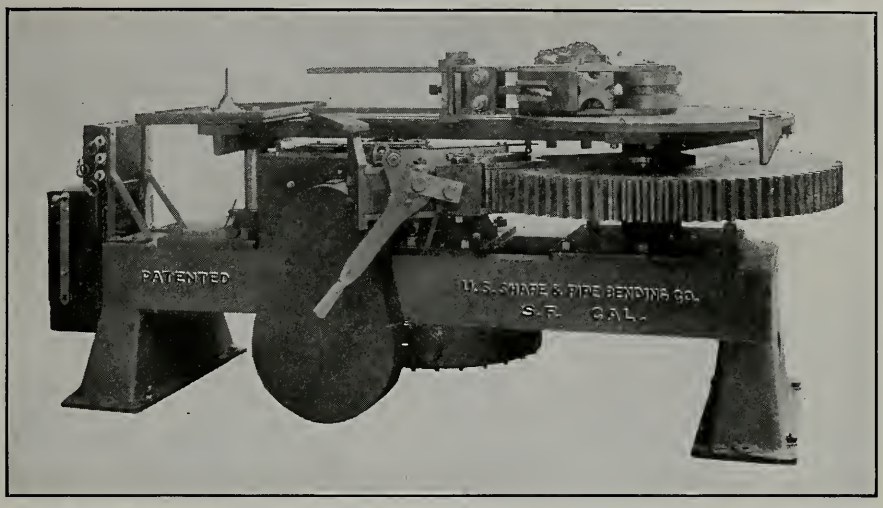

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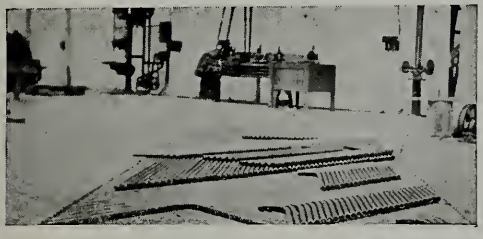

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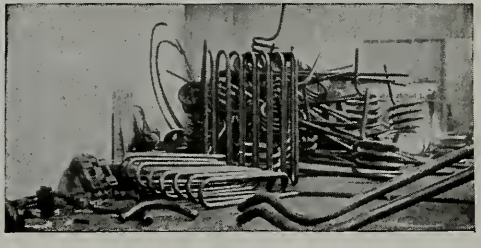

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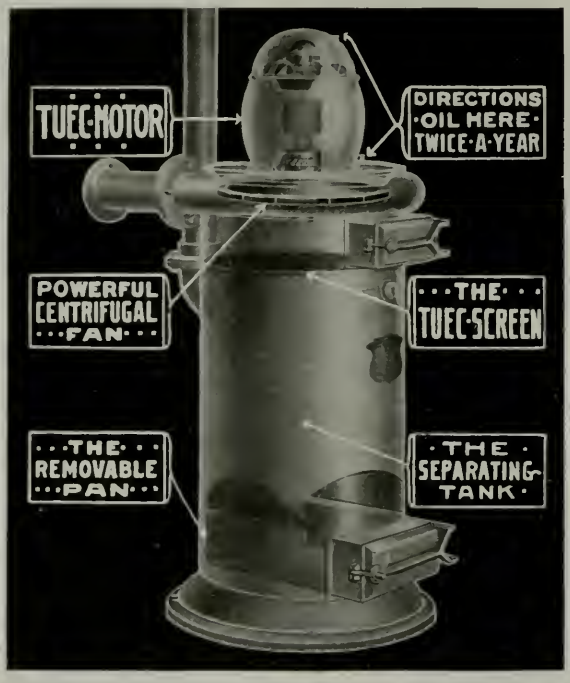

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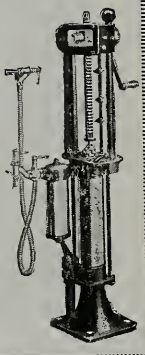

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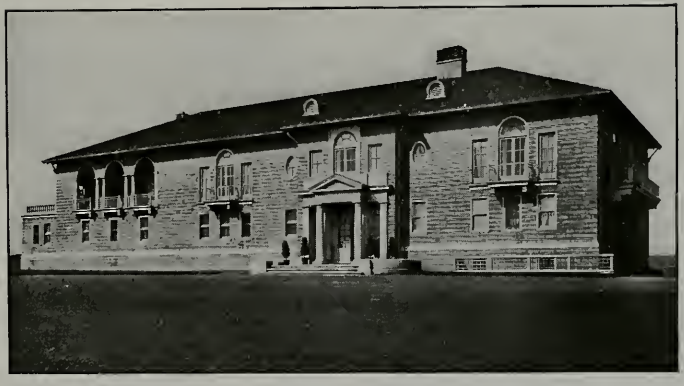

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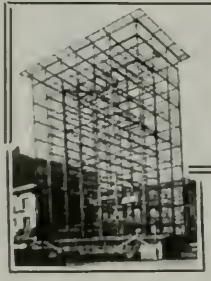

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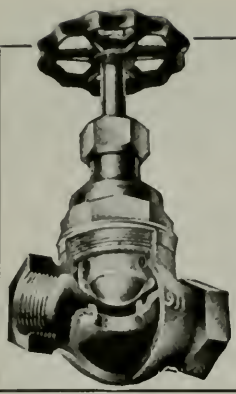

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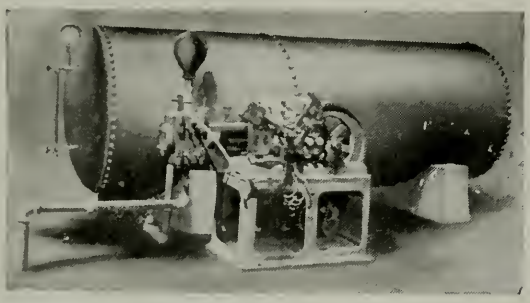

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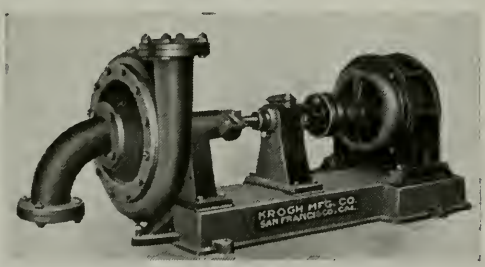

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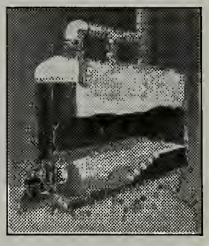
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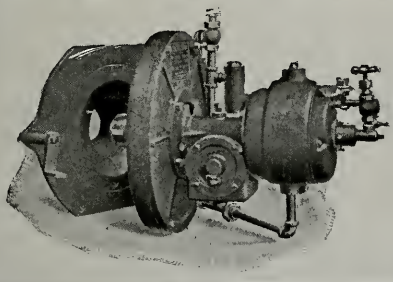

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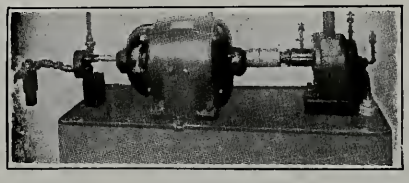

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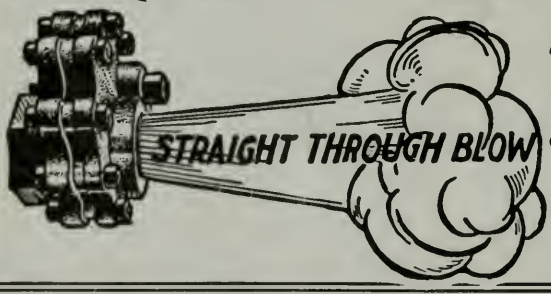

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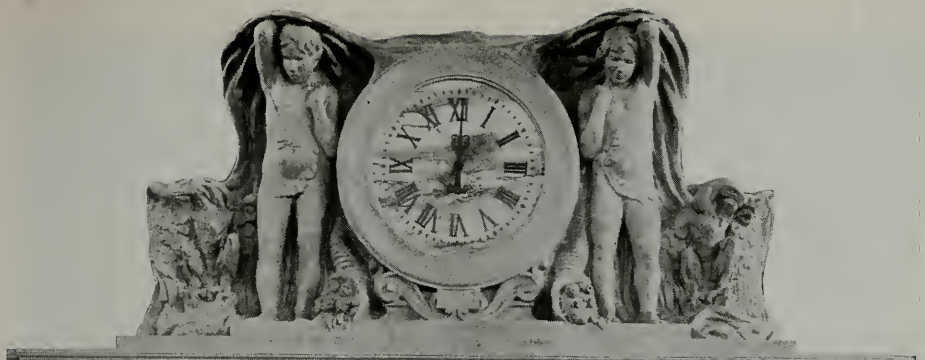

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FORMAL GARDEN, ESTATE OF MR. E. T. WILCOX, PORTLAND, OREGON
L. M. Thielen, Landscape Architect

One of the three most notable examples of landscape architecture in Portland.

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

MARCH, 1919 Vol. LVI. No. 3

The Most Notable Buildings of a City—What Are They?

By FREDERICK JENNINGS

VISIT as a stranger any of the great cities of this Coast, or for that matter of this continent, and ask the inhabitants or the Chamber of Commerce, or leading citizens, even architects, what are the most notable examples of architecture, landscape architecture or sculpture in that city, and it is almost certain that they cannot tell you. Yet this is the first question that generally comes to the visitor's mind, and it is surprising that so few cities or organizations have attempted to have an answer ready.

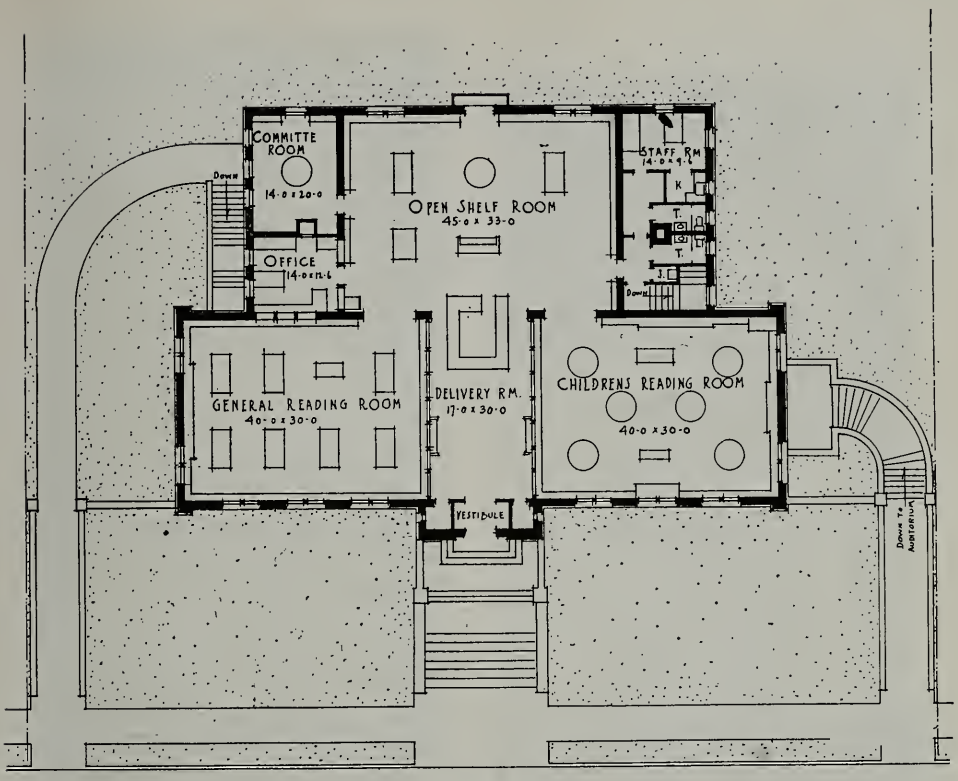
The Oregon Chapter of the American Institute of Architects, of Portland, recently decided to try to determine the most notable works of that city, in as impartial a manner as possible. This was done, not with the intent of settling once and for all the close question of which were absolutely the ten best buildings, so much as to draw public attention and discussion to at least that number of real examples of good architecture, in contrast with the poor and less worthy examples, such as are found in all cities. The layman and the general public, as a rule, know no standards of comparison; the newspapers and the Chamber of Commerce sometimes publish this, that, or another building, but generally without any effort to determine competently whether they are or are not worthy of note.

The Oregon Chapter, therefore, invited a jury composed of three outside architects, the Professor of Art at the University of Oregon, and the Curator of the Portland Art Museum, to go carefully over and discuss the buildings, landscape architecture and sculpture of the city, and name what in the jury's opinion are the most notable examples of each. Meantime the Chapter addressed a letter to all its members, asking them to prepare lists of what they considered the city's best, and these lists were combined into one preliminary list of nominations, so that the jury would be sure to consider and pass upon all buildings deemed worthy by the chapter members. The jury met for four days, from January 30th to February 2nd, inclusive, and were taken by automobile to inspect, in a body, existing structures and gardens in all parts of Portland.

The conclusions of the jury and the report embodying the reasons for their decision are most interesting, and published here with photographs of the selections, furnished by the chapter.

One of the ten most notable examples of architecture in Portland.

ALBINA BRANCH LIBRARY
LAWRENCE & HOLFORD, ARCHITECTS



PLAN OF ALBINA BRANCH LIBRARY, PORTLAND
Lawrence & Holford, Architects

Notable Examples of Architecture, Landscape Architecture and Sculpture in Portland, Oregon

[Report of the Jury]

To the Oregon Chapter of the American Institute of Architects:

IN rendering a decision, the jury feels that some explanation as to the selections is in order, that the public may understand the reasons underlying its choice. Doubtless some of the examples included and some of those omitted will cause surprise to laymen, and this statement is intended to shed some light as to the reasons which led the jury to its final decision.

The instructions to the jury were to visit personally and in a body the existing buildings of the city and to select what in their best judgment would seem to be the ten most notable examples of architecture; the three most notable examples of landscape architecture; the two most notable examples of sculpture and the five most notable small homes, within ten miles of Portland City Hall.

MAIN ENTRANCE DOORWAY AND WINDOW DETAIL, ALBINA BRANCH LIBRARY
Lawrence & Holford, Architects

The program furnished the jury states: "Points of architecture to be considered are usefulness, arrangement, relation of exterior to interior design, beauty, harmony of detail, setting and purpose, color and appropriateness." Size or cost as elements in themselves do not enter into the qualifications necessary to insure a place among a list of the best examples of architecture. The public is often misled by massiveness or cost of a building into thinking that it is therefore good architecture. For instance, the largest, most costly public building in Portland has a noticeable lack of those qualities which go to make up beauty in a structure.

Aside from the points above mentioned, the special quality pertaining to a building which constitutes its appeal to both architects and laymen is the elusive quality of charm, which is not easily defined, and which may be said to represent the soul of the building. A structure often embodies this quality even when it can be criticised on points of detail.

The following selections, the unanimous choice of the jury, will be considered as to the reasons for their choice. The order is alphabetical, no precedence having been awarded.

The Ten Most Notable Examples of Architecture

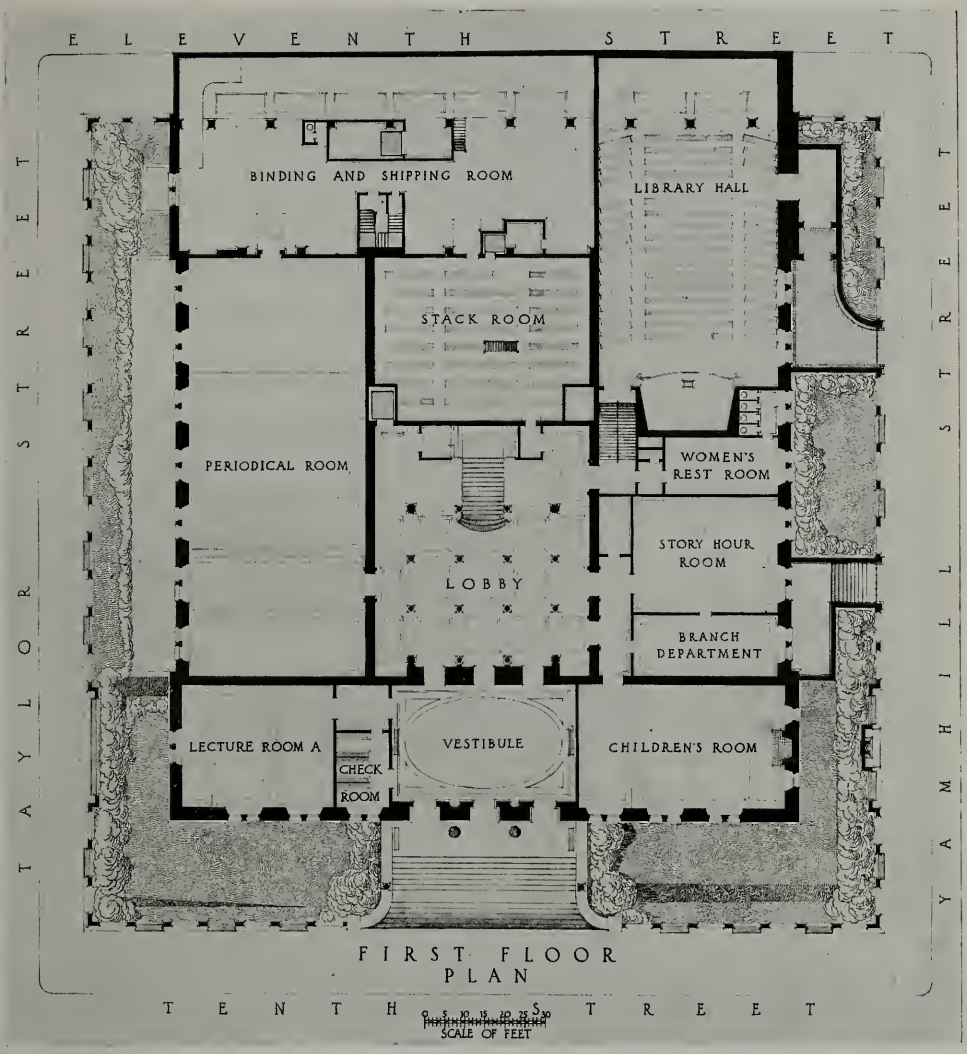
Albina Branch Library

A notable example of a small library building in the Italian Renaissance style. A maximum of usefulness is obtained because of the simple arrangement of entrance, vestibule, delivery desk and reading rooms. The exterior design expresses these rooms well. The building possesses a considerable degree of charm combining a cheerful lightness and almost elegance with workaday unpretentiousness. The lovely color and detail of the terra cotta are specially to be commended, its richness contrasting delightfully with the other simple materials. As an example of architecture this building would be notable anywhere in this country, the design being particularly appropriate for a library. It is unfortunate that a building possessing so harmonious a design could not have a more appropriate setting. It should face on a square or be at the end of a street, not on the side of a street. This is a common mistake in American cities.

FOUNTAIN AND SEATS, CENTRAL PUBLIC LIBRARY
A. E. Doyle, Architect
One of the ten most notable examples of architecture in Portland.

One of the ten most notable examples of architecture in Portland.

CENTRAL PUBLIC LIBRARY
A. E. DOYLE, ARCHITECT



PLAN, CENTRAL PUBLIC LIBRARY
A. E. DOYLE, ARCHITECT

CENTRAL PUBLIC LIBRARY
A. E. Doyle, Architect

Central Public Library

A large and dignified structure handled with splendid restraint in the Italian Renaissance style. It has evidently been practically planned to give the greatest possible usefulness as a library, yet the architect has maintained an arrangement of the large halls on the interior to permit of a simple repeated exterior motive that lends impressiveness to the whole building. There is great beauty of detail in many parts of both exterior and interior, although the building quite plainly shows a limited purse at the disposal of the architect. The materials are well handled and the detail is fine, though inclined to be small in scale for a public structure. There is an unfortunate poverty in the entrance vestibule and hall which may, however, be enriched in the future. The second-story hall is particularly attractive in motive—the exterior of the building and its surroundings (which are a planned part of it) have the great virtue of a cheerful hospitality.

SECOND FLOOR HALL, CENTRAL PUBLIC LIBRARY

A. E. Doyle, Architect

RESIDENCE FOR MR. F. J. COBBS, PORTLAND, OREGON

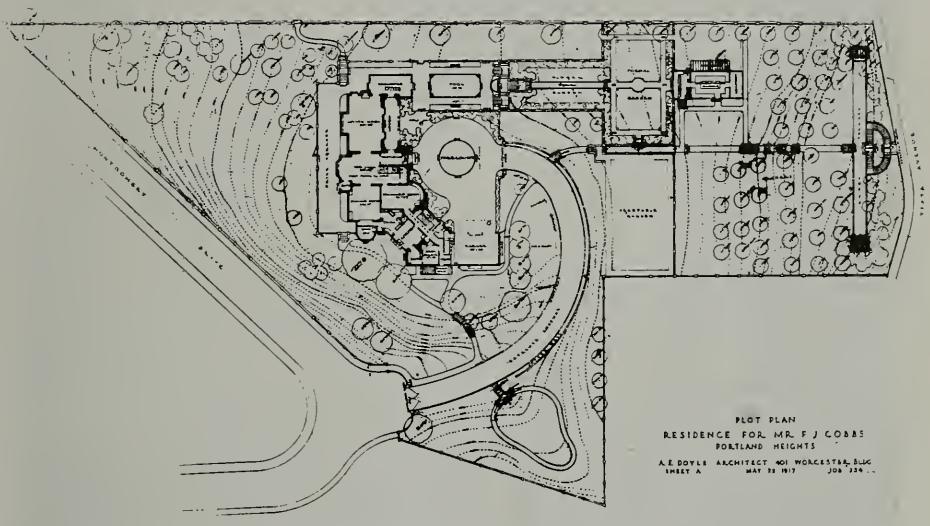
A. E. Doyle, Architect

One of the ten most notable examples of architecture in Portland.

RESIDENCE FOR MR. F. J. COBBS—SOUTH FRONT
A. E. Doyle, Architect

Cobb Residence

A well handled large residence of the English Renaissance or Tudor style. Of particular merit in originality of design and beautiful architectural expression is the entrance court or south side of the house. The combination of materials is most attractive. The arrangement of the garage and kitchen wing to form a side of the court yard is appropriate and the setting of the whole has been worked out to take advantage of a magnificent site.



PLAN, RESIDENCE FOR MR. F. J. COBBS, PORTLAND
A. E. Doyle, Architect

One of the ten most notable examples of landscape architecture in Portland.

HOUSE FOR DR. FENTON—SOUTH ELEVATION
Wade Pipes, Architect

One of the ten most notable examples of architecture in Portland.

HOUSE FOR DR. FENTON—EAST ELEVATION
WADE PIPES, ARCHITECT

HOUSE FOR DR. FENTON
SOUTHWEST ENTRANCE
WADE PIPES, ARCHITECT

HOUSE FOR DR. FENTON—DINING-ROOM
Wade Pipes, Architect

Fenton Residence

A house in the modern English Domestic style, remarkable for its successful treatment of a most difficult site. Each nook and corner of the interior shows careful and loving study, and the details are refreshingly simple and refined. It possesses a high degree of that elusive quality of charm, all the more notable because produced with inexpensive materials. Details of mouldings, proportions and arrangement of windows, fireplaces and stairs have been most faithfully and simply worked out to produce restfulness to a rare degree. Although a small house, it was, in the opinion of the jury, more successfully handled throughout than any other domestic building which they viewed, including a great many which cost as much as ten times more than this building.

One of the ten most notable examples of architecture in Portland.

FRANKLIN HIGH SCHOOL—NORTH ELEVATION
(Stadium in foreground) F. A. Narramore, Architect

FRANKLIN HIGH SCHOOL—SOUTH COURT
F. A. Narramore, Architect

Franklin High School

A large building, on the group plan, in Maryland Colonial style, which is eminently worthy of its purpose—the instilling of high ideals in the youth of Portland. It represents the most advanced type of school plan. There is no lost space, the lighting of class rooms is excellent. The building in exterior appearance combines a dignity, simplicity and charm which is far too rare in school buildings. Particularly to be commended is the court which forms the south entrance. For the benefit of those who would see all windows filled with clear sheets of glass it is to be noted that without the muntin bars in the windows the building would lose much of its effectiveness. When viewing the structure from various angles and distances it has a most restful and pleasing appearance, and on closer inspection one finds that the simplicity of its well studied detail is just as charming. The color of the brick work and central cupola are exquisite, except that a slight variation in tone of the brick might have produced a richer texture of wall surface. The setting of this building is most appropriate—the architect having placed the building where it must always be seen to good advantage across the ravine which contains the stadium. Few cities of this country possess as successful an example of school architecture as is found in Franklin High School.

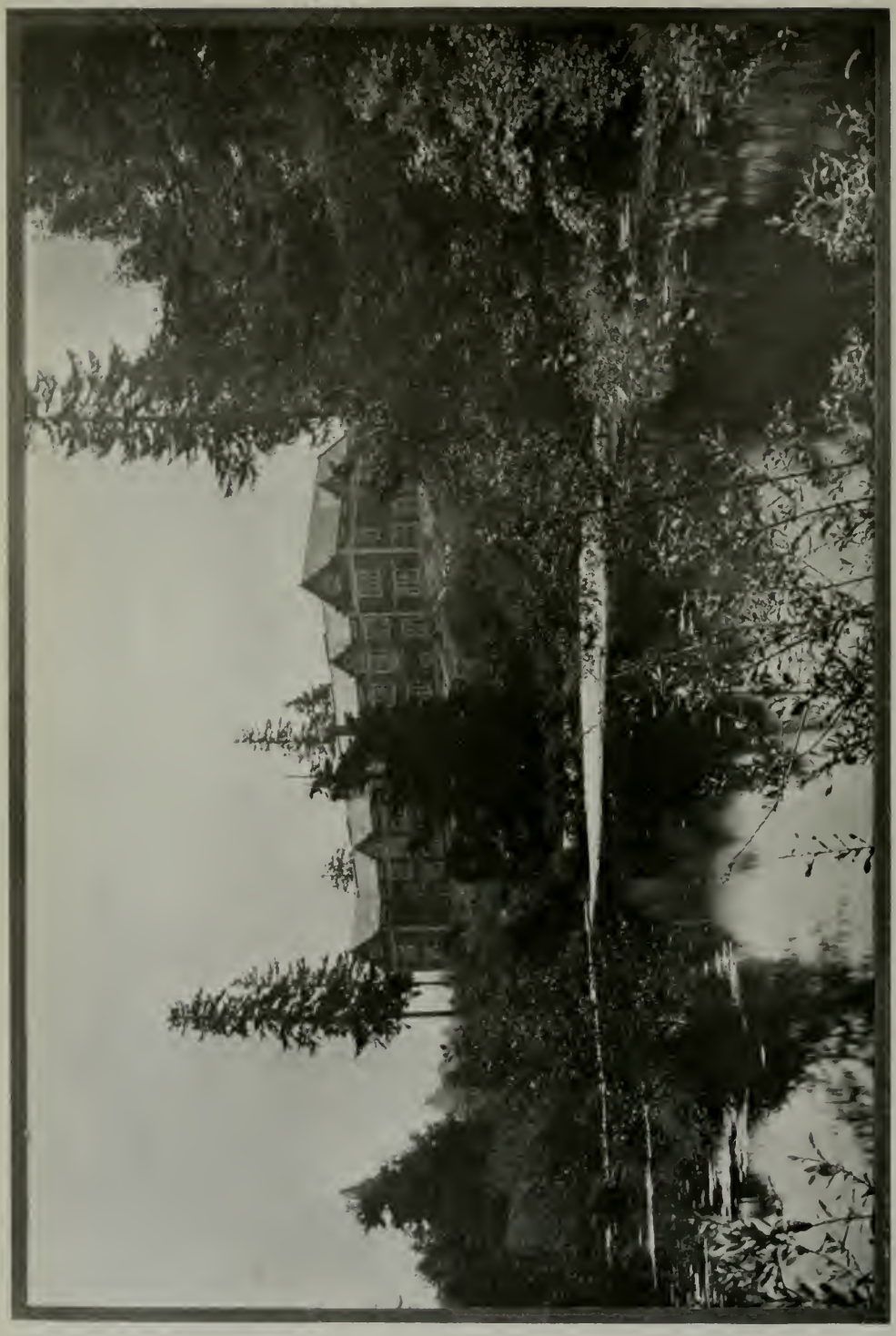
FRANKLIN HIGH SCHOOL—NORTH ELEVATION
F. A. Narramore, Architect

Portland Hotel

A U-shaped building in the French Renaissance style of the period of Henry II. In spite of its age, and the lack of many of the details which go to make up a modern hotel building, the Portland, by reason of the generous and inviting appearance of its large open court, and the general domestic character of its exterior, possesses an interesting quality lacking in any other Portland hotel. The giving up of so much space to the comfort of the guests is especially to be commended. The very restraint of its design in no way impairs the beauty and simplicity of its proportions and the unostentatious arrangement and decoration of its interior offers a relief, in these days of over elaboration, which must have a psychological effect on its guests.

One of the ten most notable examples of architecture in Portland.

PORTLAND HOTEL—EAST COURT
McKIM, MEAD & WHITE, ARCHITECTS

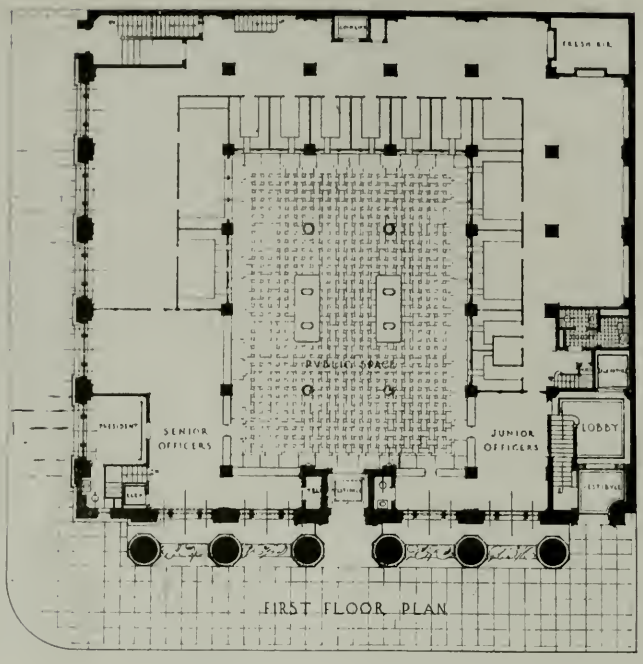


MAIN BUILDING, REED COLLEGE
NORTH ELEVATION
A. E. DOYLE, ARCHITECT

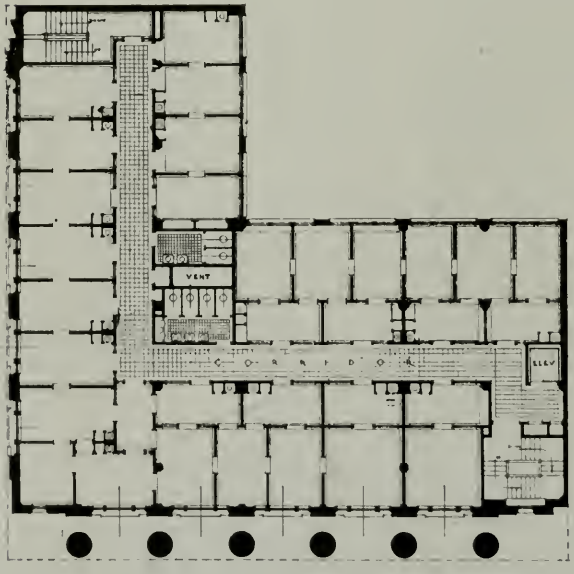
REED COLLEGE—SOUTH ELEVATION
A. E. Doyle, Architect

Reed College Buildings

A well handled group in the English Collegiate style, of the Tudor period, with pleasing color effect of material and good collegiate atmosphere. The existing structures seem well arranged to form part of the ultimate group of buildings for a larger college. The exterior design expresses the use and character of the rooms within, and the various bays, doorways and details have been studied in skillful and scholarly fashion. The dormitory building has an interesting domestic quality which must make it an attractive place of residence. As it is it possesses both beauty and harmony of detail to a very pleasing degree and will gain year by year as ivy and other planting tie more and more into the landscape treatment of the grounds, which it now seems to lack.



FIRST FLOOR PLAN



OFFICE FLOOR

SCALE

PLANS, U. S. NATIONAL BANK
A. E. DOYLE, ARCHITECT

UNITED STATES NATIONAL BANK, PORTLAND, OREGON
A. E. Doyle, Architect

One of the ten most notable examples of architecture in Portland.

United States National Bank

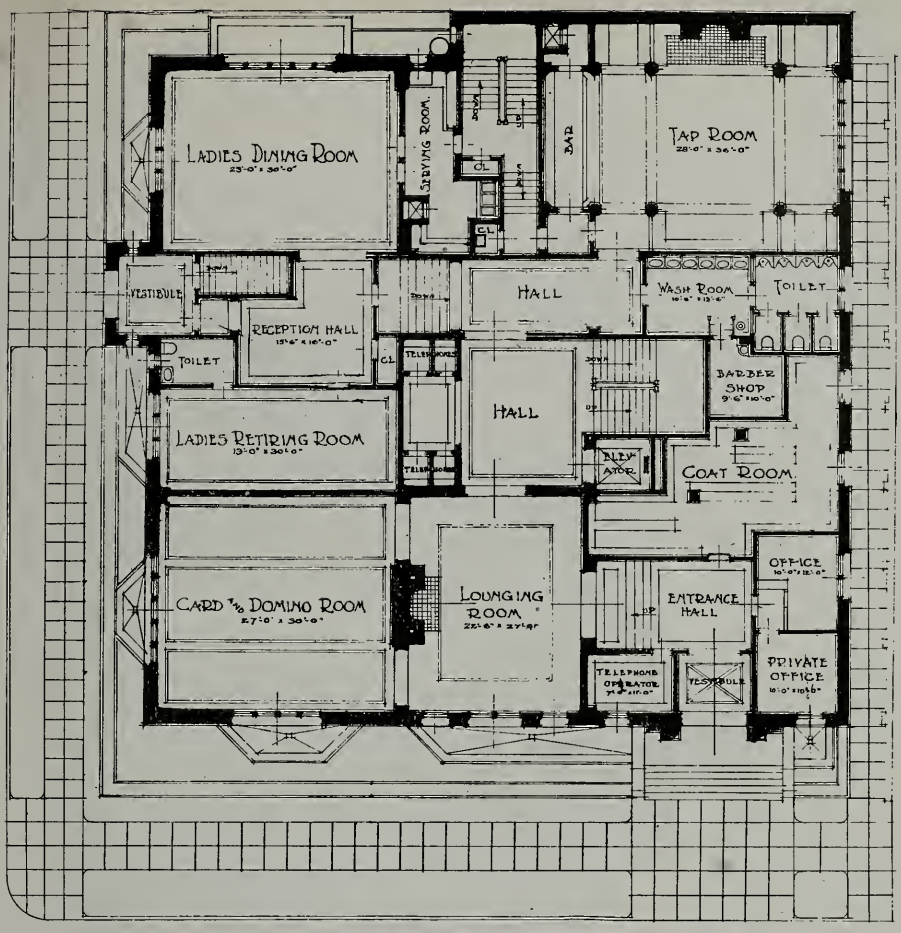
An interesting business structure in a modern adaptation of the Roman style, selected largely because of its excellent plan and charming interior detail and coloring. It is not so striking in appearance as another Portland bank building, yet is devoid of some of the architectural ponderousness and flaws of plan and design of the latter. The exterior is florid, lacks somewhat in originality of motive, and its three-story colonnade may be criticized as not truly expressing the one-story banking room with two stories of offices above it on the interior; however, this fine banking room is so beautiful and appropriate that the jury felt that the building was entitled to a place in this list.

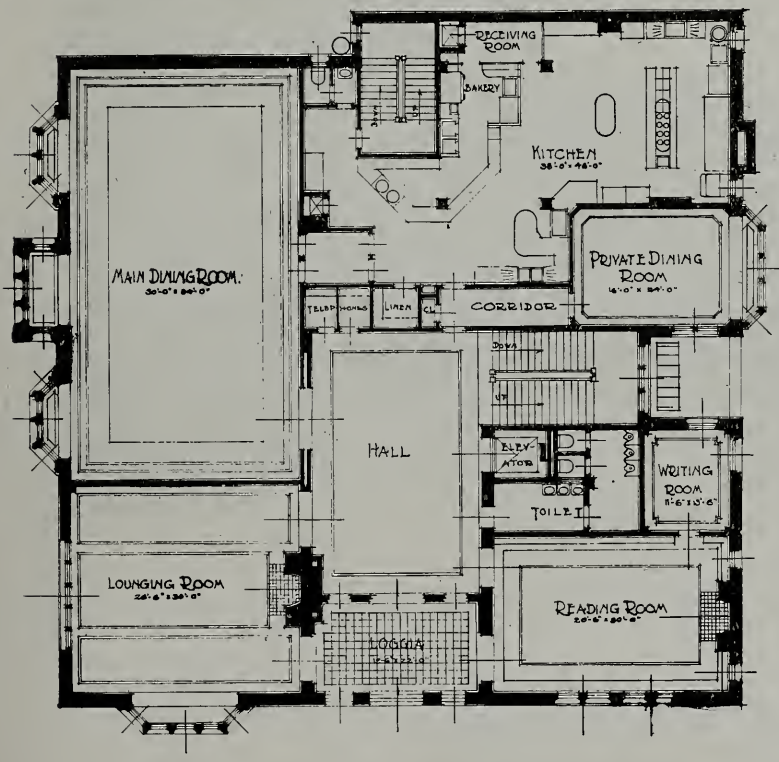
University Club

An attractive structure in the English Collegiate or Tudor style. It is a comfortably arranged club building whose spacious halls and rooms are still intimate and inviting. The second floor plan is particularly successful, with its great dining-hall. The whole building gives a feeling of appropriateness and cheerful atmosphere.

One of the ten most notable examples of architecture in Portland.

UNIVERSITY CLUB BUILDING, PORTLAND, OREGON
WHITEHOUSE & FOULHOUX, ARCHITECTS





PLANS

UNIVERSITY

CLUB,

PORTLAND

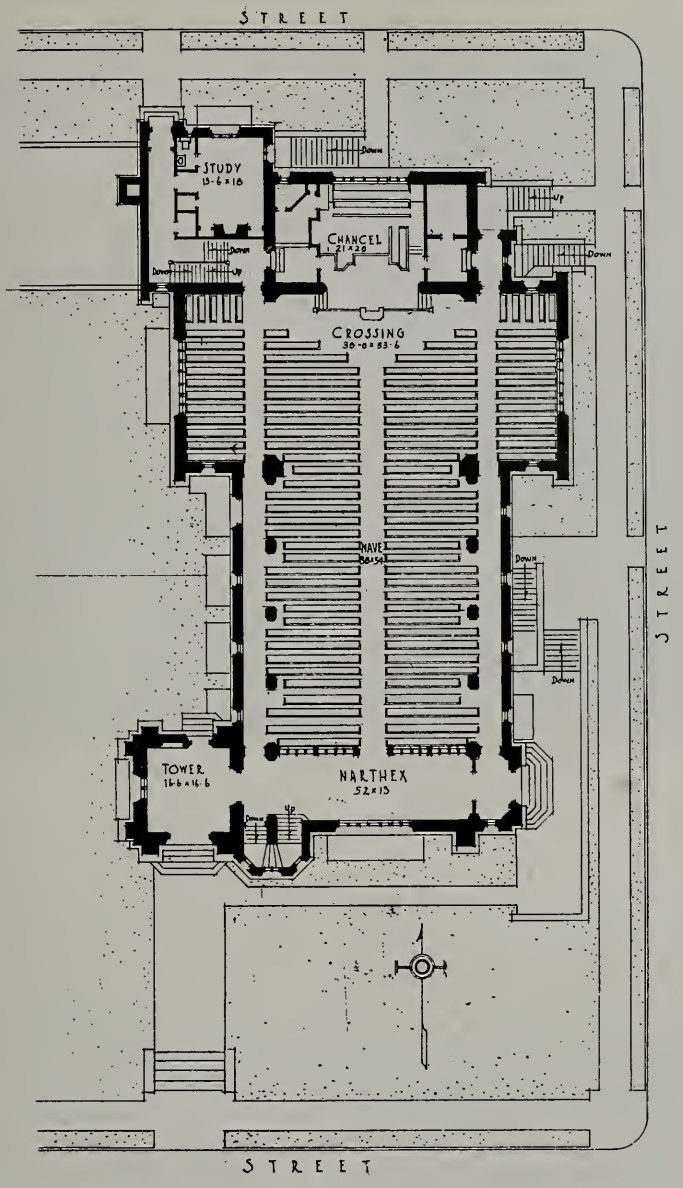
Whitehouse &

Fouilhoux,

Architects

One of the ten most notable examples of architecture in Portland.

WESTMINSTER PRESBYTERIAN CHURCH
LAWRENCE & HOLFORD, ARCHITECTS



PLAN, WESTMINSTER PRESBYTERIAN CHURCH, PORTLAND
Lawrence & Holford, Architects

Westminster Presbyterian Church

A moderate sized church in the English Gothic style, excellently handled. The plan is laid out to give the greatest usefulness, the stone work is good in both color and treatment—the interior is well arranged and makes a restful and dignified house of worship. It has the sort of sincerity and self restraint which we Americans believe to be a trait of our best art. The glass in the windows is rich and beautiful in color. The building is harmonious and gives an impression of having been faithfully studied in all its parts to give a greater nobility of expression than any other church seen in Portland.

WESTMINSTER PRESBYTERIAN CHURCH
Lawrence & Holford, Architects
One of the ten most notable examples of architecture in Portland.

Three Most Notable Examples of Landscape Architecture

Garden of Judge Pipes' Residence

A small home garden, laid out formally enough to provide the most effective opportunities for walks, planted rows and groups of shrubbery on an ordinary lot. The whole is thoroughly in accord with a well designed house and forms an appropriate and attractive compliment to the building. It is a garden to live in and enjoy and distinctly shows that kind of harmony and simplicity which come from a deeper study of landscape arrangement than can be obtained from mere horticulture, or the setting out of a miscellaneous lot of rare plants, no matter how lovingly tended.

JUDGE PIPES GARDEN, PORTLAND
One of the three most notable examples of landscape architecture in Portland.

Formal Gardens Peninsula Park

This broad sunken garden, with its rose terraces and stone balustrades leading down from broad stairways, is very successful and will increase in dignity and attractiveness as years go by. It is appropriate to the size of the park in general and refreshing to the visitors who seek the park greenery in summer or winter. Such formal schemes of park arrangement are not suited in all cases, but seem unusually well adapted to purpose here.

SUNKEN GARDENS, PENINSULA PARK
E. T. Mische. Landscape Architect
One of the three most notable examples of landscape architecture in Portland.

FORMAL GARDENS, MR. T. B. WILCOX'S ESTATE

L. M. Thielen, Landscape Architect

One of the three most notable examples of landscape architecture in Portland.

FORMAL GARDENS, MR. T. B. WILCOX'S ESTATE
L. M. Thielen, Landscape Architect
One of the three most notable examples of landscape architecture in Portland.

The Wilcox Gardens

A delightful combination of the formal and naturalistic styles of landscape architecture. There is a nice relation between the house and this well arranged, formal garden with its pool, pergolas and summer house. The whole fits the surrounding locality with charming success, though the house is a trifle less interesting than the garden. The whole composition shows evidence that no subsequent fancies were allowed to disturb a well conceived scheme. The general aspect is pleasingly magnified by the vast surroundings of meadow and the beautifully rolling partially wooded hills of the Tualatin Valley which leaves hardly anything else to be wished for. It is here that one appreciates the importance of the landscape architect and the wonderful opportunities thrown away in so many other pretentious yet unsuccessful gardens, estates and parks which might have been equally successful with competent landscape advice. Splendid architectural results are often negatived and made ineffective for lack of such competent landscape co-operation.

SKIDMORE FOUNTAIN
Olin Warner, Sculptor

One of the two most notable examples of sculpture in Portland.

Two Most Notable Examples of Sculpture

The Skidmore Fountain

Portland is fortunate in having so fine an example of monumental sculpture. The sculptor carefully arranged the architectural lines of the fountain so that it might be in harmony with the surroundings and the space to be used. The old buildings adjacent still preserve something of a solid and simple dignity. In every way the artist's intuition meets the problem. No modern sculptor has worked more vitally in the classic spirit, and it is doubtful if any modern fountain that we know of exceeds this in dignity and charm.

Coming of the White Man

This group presents a subject of romantic appeal to many Americans in a pleasing decorative spirit. It is well placed on its boulder among the maple trees and is competently modelled and spirited in composition.

COMING OF THE WHITE MAN, CITY PARK
Herman McNeill, Sculptor

One of the two most notable examples of sculpture in Portland.

RESIDENCE OF MRS. STRONG
Lawrence & Holford, Architects

One of the five most notable examples of small house architecture in Portland.

RESIDENCE OF MR. DARLING

One of the five most notable examples of small house architecture in Portland.

One of the five most notable examples of small house architecture in Portland

RESIDENCE OF MR. H. A. CONNER
Lawrence & Holford, Architects

Five Most Notable Small Homes

The houses selected as the most notable examples are compact, neatly designed homes whose attractiveness lies in good proportions, a careful spacing of openings, a sparing use of good detail and good color effects. There are undoubtedly many fine homes which the jury was not able to view and which might be considered; however, the following are the five best examples of small house architecture viewed by the jury and set a high standard of domestic design. They are:

Darling residence, 1340 Thirtieth Street, Eastmoreland.
H. A. Conner house, 576 East Eighteenth Street North.
Residence of Mr. Strong, Myrtle Street and Montgomery Drive.
Mrs. John Pipes' residence, 562 Carlton Street.
Sam'l Pierce's residence, 651 Fifty-ninth Street North.

As Portland is so largely a city of homes, attention is bound to be attracted more and more to the small or moderate cost dwelling. It is a sad fact that architects do not generally have the opportunity, or rather are generally not allowed sufficient compensation, to be able to undertake the design of small houses, which constitute in number the greatest bulk of buildings of any city, and therefore affect the greatest number of its inhabitants. Good architecture is not only a matter of providing beautiful exterior designs or color, but it is a study of making the home building fit the home site most advantageously, harmoniously and restfully for the owner. The day may come when Portland may be sufficiently mindful of this fact, to have a department which will provide well designed, small house plans for people of small means, as is already being done by the Massachusetts Homestead Commission and other public agencies. The greatest hope of any city lies in the comfort, convenience and welfare of its home-owners and home-makers.

One of the five most notable examples of small house architecture in Portland.

RESIDENCE OF MRS. JOHN PIPES
WADE PIPES. ARCHITECT

INTERIOR, RESIDENCE OF MRS. JOHN PIPES
Wade Pipes, Architect

Honorable Mention for Other Notable Examples of Architecture, Landscape Architecture and Sculpture

The most notable examples of architecture, landscape architecture and sculpture already described form in the opinion of the jury a rather unusually high standard. It is to be regretted that in Portland as in other cities the number of buildings setting such a high standard is not greater than it is. This fact is due probably here as elsewhere to the lack of well trained architects prior to the last two decades and to the general advance in understanding and appreciation on the part of the building public, who needed demonstrations of the better things that could be done by trained men to convince them that they should be employed.

There are, however, a considerable number of other examples of architecture, landscape architecture and sculpture worthy of note in Portland, and the jury has awarded them an honorable mention, as follows:

Honorable Mention as Notable Examples of Architecture.

W. B. Ayer residence, 162 North Nineteenth Street.
Benson Hotel, Broadway and Oakland Avenue.
Couch School, Twenty-first and Glisan Streets.
Benson Polytechnic School, East Twelfth and Hoyt Street.
Gresham Branch Library, Gresham.
North Branch Library, 190 East Killingsworth Street.
A. L. Mills' residence, 171 North Twentieth Street.
S. S. Montague residence, Hillsdale.
Waverly Golf Club, near Milwaukie.
New Post Office, Broadway and Glisan Streets.

Awarded honorable mention as a notable example of architecture in Portland.

BENSON HOTEL, PORTLAND
A. E. Doyle, Architect

Paul Murphy residence, 1092 East Burnside Street.
First National Bank, Fifth and Stark Streets.
Mrs. Hoffman's summer residence, Kings Heights.
Moose Hall, Fourth and Taylor Streets.
H. M. Esterly residence, Hillsdale.
T. H. Sherrard residence, Rock Spur.

Landscape Architecture—Laurelhurst Park, Laurelhurst.
Grounds of Peter Kerr residence, Elk Rock Station.

Sculpture—Statue of Jefferson, Jefferson High School.

In submitting this report, the members of the jury desire to express their warmest appreciation of the inspiring opportunity offered them to thus compare and study the best work of a great city. It has been a privilege. It is their earnest hope that this may be but the beginning of a real purpose on the part of people in Portland to hold up some standards of comparison. It makes little difference whether the judgment here rendered is entirely agreed with or not, if people will begin to definitely set up standards of comparison which will provoke discussion and a better understanding of what is worth while in architecture, landscape architecture and sculpture.

Respectfully submitted, ANNA B. CROCKER,
GEORGE REBEC,
ARTHUR L. LOVELESS,
LEE A. THOMAS,
CHARLES H. CHENEY.

The City Planning Movement in Portland

By ELLIS F. LAWRENCE, A. I. A.
Professor of Architecture, University of Oregon; Member Portland City Planning Commission

PORTLAND, Oregon, stands unique among American cities in having placed the stamp of popular approval at the polls on the city plan—and in possessing a Municipal Housing Corporation, of which the mayor of the city is president.

Prior to 1910, Portland had but started its park system. It was platting its outlying districts in proportion to the extent of real estate activities which made a profitable field for operators. These plats were rushed through without proper check by any city plan commission and, with the varying political fortunes of the various city engineers, general chaos in street arrangements resulted.

The need for parks had been recognized, but a comparatively small acreage was in control of the city. The Olmsted Bros. had been called in for consultation and had suggested in outline a comprehensive boulevard system. Civic buildings were widely scattered, freight conditions in the terminals were beginning to be troublesome and congestion in the down-town districts was fast proving the fallacy of the rectangular, gridiron scheme of narrow streets and short blocks.

The Portland Architectural Club appointed a special committee on city planning and this committee conceived the idea of advancing a plan for the City of Portland which, had it been completed, would have represented the composite work of its members interested in the problem. The committee at once made a study of city planning and art commissions. While the preliminary studies for the plan were being made by the various members, a group of citizens were called together by the then United States Senator Jonathan Bourne who, while serving his term in Washington, had met Mr. Daniel Burnham and become interested in the work of the National Fine Arts Commission in the capital.

At this meeting it was decided to organize a Civic Improvement Association in connection with the leaders of the Portland Chamber of Commerce, which was readily accomplished and funds subscribed in sufficient amounts to employ Mr. E. H. Bennett of Chicago to make a year's study of the problems confronting Portland. The architectural committee at once endorsed the wisdom of securing a non-resident expert, and turned its attention to securing a planning commission.

Mr. Bennett's plans were carried on under the direction of an executive committee of the Civic Improvement Association and upon their completion, in order to popularize the movement, the Greater Portland Plans Association was organized, which gathered into its membership representatives of all of the more important organizations within the city.

Prior to the organization of this association, the city plan committee of the Portland Architectural Club was able to secure a provision in the proposed new charter of the city for a Planning Commission with unusual veto powers. This charter failed to carry, however, and the campaign was renewed by a similar committee from the Oregon Chapter of the American Institute of Architects, which had been recently organized—with the result that the new Charter Revision Commission reported favorably on the Planning Commission, as well as on the submission of the Bennett plan to the voters for their approval. For some unexplained reason, the provision for the creation of the Planning Commission was not placed on the ballot. But under the campaign of publicity carried on by the Greater Portland

LAURELHURST PARK, PORTLAND
E. T. Mische, Landscape Architect
Awarded honorable mention as a notable example of landscape architecture in Portland.

Plans Association through its Greater Portland Plans Monthly, newspaper articles, lectures, rallies, etc., the Bennett plan was approved by the voters, as a guide for the new city commission form of government, which was created by the new charter at the same election.

The Greater Portland Plans Association, having surrendered the Bennett plans to the city commissioners, became inactive and, while the commissioners who had the plans in charge called into being an Advisory City Plan Commission, circumstances made it difficult to secure much progress in the carrying out of the recommendations contained in Mr. Bennett's report. In the meantime, however, the new post office and the court house had been located in accordance with Mr. Bennett's suggestions; an important arterial highway—the Sandy Boulevard—was widened in accordance with the plan; and the Greater Portland Plans Association had undertaken a campaign to widen Burnside street, the traffic backbone of the city.

To aid in carrying this venture through, a bill was presented to the Legislature providing for excess condemnation. The property owners of Burnside street, being opposed to the widening, were able to defeat that portion of the proposed law, calling for excess condemnation—as far as it applied to streets and boulevards, leaving the legislation to apply to parks and playgrounds.

Owing to the lack of any authority or official contact with existing boards, the Greater Portland Plans Association was not able to secure the location of the new Central Library or the Civic Auditorium in accordance with Mr. Bennett's suggestions.

Prior to the advent of the Commission form of government, Portland had developed a sound park system under the direction of E. T. Mische, a trained landscape architect, then Park Superintendent. The first units of circulatory boulevard systems were carried through and park development, including community houses and play-grounds, was secured.

Under the readjustment of governmental features of the city, together with a period of slow development, little was accomplished in the way of city planning up to 1917, when war industries brought such a pressure on the equipment of the city that patriotic citizens rallied to the cause of city planning with renewed interest, especially in connection with the special phases of traffic and housing conditions.

The housing committee of the Oregon Chapter inaugurated the move-

ment to secure a survey of industrial housing conditions and industries. Calling to its support leading citizens and various organizations, it was able to secure emergency legislation from the City Commissioners, creating a Housing Survey committee, with available funds to secure an expert. Mr. C. H. Cheney of California was appointed and the survey undertaken in the fall of 1918.

The Housing Survey committee had for its chairman Mr. Lloyd Wentworth, director of this district for the wooden division of the Emergency Fleet Corporation, with the following members: Mr. Wilfred Smith, director of the U. S. Employment Bureau under the Department of Labor; Mr. B. W. Sleeman of the Carpenters' Union; Mr. J. J. Sayer, manager of the Building Owners' Association; and Mr. H. E. Plummer, City Inspector of Buildings.

The result of the preliminary survey by Mr. Cheney verified the serious condition of industrial housing in Portland, which was indicated by the preliminary survey made by the Oregon Chapter of the A. I. A.

At the behest of Mr. A. Merritt Taylor, director of the Bureau of Housing and Transportation of the Emergency Fleet Corporation, Portland undertook to get under way at least two thousand workingmen's homes before January 1, 1919. The State Council of Defense was appealed to and a mass meeting was called, with the result that a Portland Municipal Housing Committee was appointed. All interests were liberally represented on this committee, which counted among its members, also, the Housing Survey Committee, which was to direct Mr. Cheney's survey.

After a study of the problem, a Municipal Housing Corporation was incorporated with the mayor as president of the board of directors. Only members of the Municipal Housing Committee are directors of the company, known as the "Portland Housing Corporation." This company limits its dividends to 6 per cent and is organized with liberal powers to handle housing problems of the city in peace times, as well as in war times.

Special concessions were secured from dealers, contractors and professional men. The services which the corporation would have given, had the war continued, would have brought to the small wage earner the best professional advice available, as well as price reductions of 15 or 20 per cent below market rates. Plans were under way for a Second Mortgage Company to loan money to desirable risks at 6 per cent interest on a fair amortization period.

The Oregon Chapter of the A. I. A. offered as its contribution thirty-six sets of preliminary plans for workingmen's homes costing between $2000 and $4000. Working drawings for six of these were completed and had the two thousand houses been built from these thirty-six plans, the Portland Housing Corporation would have paid the architects but $9.50 for each set of three blue prints and specifications used.

With the signing of the armistice and the resulting uncertain conditions, the campaign for industrial housing has, for the present, been held in abeyance, but will later, no doubt, become the most important phase of the Own-Your-Home campaign which is being conducted at the Bungalow, an attractive wooden building in the down-town district, which was intended as headquarters for the Portland Housing Corporation during the war emergency.

As the monthly reports of Mr. Cheney came to the Housing Survey Committee, it was recognized that the problems of solving the housing and traffic difficulties of the new industrial Portland were tied up to the passing of a Housing Code, as well as to the problems centering about the zoning

of the city, its terminals and waterways. Therefore the Housing Survey Committee, feeling that their task was broadening into general city plan questions, recommended to the City Commissioners that a permanent City Plan Commission be authorized, and also placed their approval on the housing code proposed by the Portland Housing Association.

Both of these recommendations were followed. The housing code is now in force.

The ordinance establishing the Portland City Planning Commission was passed in December, and January 25, 1919, Mayor Baker named the following as members of the commission: J. P. Newell, J. C. Ainsworth, Ira F. Powers, B. W. Sleeman, A. E. Doyle, E. B. MacNaughton, and Ellis F. Lawrence, and ex-officio City Attorney W. B. LaRoche, City Engineer O. Laurgaard and Mayor Geo. L. Baker.

The new City Plan Commission is already at work—its first problems being the continuation of the housing programme and the zoning of the city.

One important phase of city planning which is at present occupying the attention of patriotic citizens, is that centering around the proposed Victory Memorial, a scheme which has received the stamp of approval of the special committee appointed by the mayor and contemplates the carrying through of the so-called Park Blocks, making a 225-foot artery from the proposed site of the Union Station to the hillside Memorial Park with its Victory Monument high above the city and connecting with the Memorial Hospital and highway.

Portland is gloriously situated, both scenically and industrially, at the convergence of two great rivers, tapping two valleys of enormous wealth. Being at the head of deep water navigation, its advantages as a terminal port must be evident to all. Its natural advantages warrant the assumption arrived at by Mr. Bennett in his early studies of the Portland situation that it will have a population of nearly two millions of people by the middle of this century.

Those studies, made in 1910-1911, were practically all of traffic conditions and the major street plan. They have served a splendid purpose in awakening people to the need for through traffic arteries and will be most valuable to the new City Planning Commission in its work.

However, before making final street plans it is obviously necessary to determine definitely where the business, residence and industrial districts or zones of the city are to be, so that traffic streets may be permanently paved and arranged to meet the special needs of each district. Existing tendencies of growth and investments must be protected in Portland, as they already have been in California cities, St. Louis, New York, and dozens of communities, large and small, all over the country.

The zoning of Portland will therefore be the first and most important work of the new City Planning Commission. Every neighborhood of the city will be consulted as to what protection it needs to safeguard its future. Direct conferences and meetings of property owners and local improvement organizations will be held with representatives of the Planning Commission. This work must be thoroughly and carefully done and will take six or eight months, after which public hearings will be held by the City Planning Commission to give everyone an opportunity to be heard before any final recommendations are made to the City Council.

The zoning or districting of the city is fundamental and basic. Until it is sensibly done, little can be accomplished for better real estate, living or working conditions. All civic advance really depends on it.

RESIDENCE OF MR. S. S. MONTAGUE
Joseph Jacobberger, Architect
Awarded honorable mention as a notable example of architecture in Portland.

The Future of Portland and Planning For It

By A. L. BARBUR, City Commissioner of Public Works.

PORTLAND is a city of over 300,000 inhabitants and already holds a leading position among the cities of the Pacific Coast. The situation of this metropolis offers a unique combination of opportunities. As a maritime city and international mart upon a great river her location is superior to that of London and Hamburg. As a manufacturing city, able to draw upon hydro-electric resources superior to Buffalo and Niagara Falls, she affords possibilities similar to Pittsburg without being handicapped by dirty and unhealthful smoke. And finally, as a distribution center for Oregon, the major portion of Washington and Idaho, whose products can be conveyed on gentle "water-level" grades to Portland at a minimum of cost and effort, she is economically on a par with Chicago.

Natural advantages alone, however, will not tend to promote the growth and expansion of Portland unless her citizens take full advantage of the opportunities placed before them. History has shown in the past that cities which have labored under the handicap of natural disadvantages but which have been guided by citizens of foresight and initiative and, above all else, possessed of unselfish interest in the welfare of the community at large, have often surpassed cities more fortunately situated.

If Portland is to come into her own, she must look the future squarely in the face, measure fully her opportunities and in a scientific and systematic manner take advantage of them. Neither she nor any other city has done this fully in the past. President Garfield's maxim, "An ounce of prevention is worth a pound of cure," applies to cities as well as to individuals. In the past, cities have been allowed to straggle along, often torn and misdirected by selfish interests, until some defect would become so apparent that general public protest would force a halt and an applica-

tion of the "pound of cure," whereas wise planning a few years earlier would have applied the "ounce of prevention." The following instances will afford examples of this:

First—In the laying out of streets, we have numerous cases in Portland where additions were platted and streets laid out, not with a view to the future growth and welfare of the city, but rather to secure the maximum number of lots to be sold to prospective newcomers in the city. As the city grew, some of these additions were nearly as effectively isolated as Germany by the blockade of the allies, and eventually "the pound of cure" had to be administered in the form of expensive street opening proceedings. Unfortunately, even today we have several drastic cures that still remain to be made.

Second—In the matter of street improvement, about ten years ago Portland embarked upon an extensive street improvement programme, which, though perfectly good in intention, was not scientifically planned or controlled. The paving promoters and the "shoestring" real estate speculator had their inning, and as a result we found many miles of streets paved before either water mains or sewers had been constructed. Also over $1,000,000 was invested in paving streets in outlying additions, where the property was not sufficiently developed or built up to pay ½ per cent interest on the investment, let alone 6 per cent.

Third—In the matter of harbor and port development: Here the destinies of the city were left in the hands of a few individuals who manfully did their parts as individuals, never realizing that European cities were already setting the example of co-operation on a gigantic scale and in a systematic manner, not only on the part of individual private owners but also by nation, state, city, utility corporation and private citizen. In the same way that the "general staff" method has proven paramount in military affairs as against the individual, even of a genius of Napoleonic order, so must we unite all interests in a systematic and well-planned scheme of port development. Co-operation removes ignorance and prejudice and awakens an enthusiasm and unselfishness that will open wide the purse strings to help to make Portland a leading maritime city.

Fourth—In the matter of buildings: For many years Portland did not feel the menace of slum conditions because intelligent and systematic efforts were early made to promote the "own your own home" idea. This, coupled with the fact that the vast majority of newcomers were of American descent or at least under the influence of American ideals, made Portland the leading city among the larger municipalities in the percentage of homes actually owned by those dwelling in them. For instance, the census of 1910 showed that over 46 per cent of the homes in Portland were owned by those living in them. Lately, however, in certain portions of the city, tendencies toward slum conditions are manifesting themselves and the passage recently of a "housing code" is the first step in the application of the "pound of cure." This was given at an early stage and the patient ought to convalesce rapidly.

Fifth—In the matter of city zoning: The factors which have been alluded to immediately above obscured for a long time the need of planning judiciously for the location of industrial sites. Now, however, as the industrial plants and residences begin to come into close contact, we realize that the "ounce of prevention" stage is fast fleeting and that action must be speedily taken to forestall the confession of another mistake.

A Planning Commission was established in Portland in January of this year and we have already had it apply prophylactic treatment. A few weeks ago an attempt was made to establish a large commercial garage in the midst of Irvington, one of the choice residential districts of the city. The residents in the vicinity protested vehemently and the Planning Commission was appointed a court of judicature.

A large "neighborhood" meeting was arranged for in the vicinity of the location of the garage which proved to be a "conversion" meeting of the most decided kind. Two representatives appointed on a local committee to represent the interests of the garage proprietor, after the principles of scientific zoning had been explained to them by Mr. Cheney, consultant for the Planning Commission, perceived that the welfare and future growth of that particular district was endangered by the location of a garage at this point and persuaded the garage owner to the same effect. He has now located in the district recommended for business by the neighborhood and the Planning Commission and states that he is glad that the change was made, as the new site, both from a pecuniary point of view and from the standpoint of a greater Portland, is far preferable to the old.

If we plan wisely and systematically we shall grow and expand, and yet our industries will be located in places where the cost of production may be kept at a minimum without intruding upon the privileges and health of our individual citizens, and our city will become a city of home owners, all interested in the welfare of the city. I predict that the city on this coast which first develops a thorough-going, systematic method of city planning and fearlessly and consistently carries it through will become the great metropolis of this coast.

BENSON POLYTECHNIC HIGH SCHOOL

F. A. Narramore, Architect

Awarded honorable mention as a notable example of architecture in Portland.

Portland's Reasons for Adopting a City Zoning Plan

By JAMES J. SAYER
Secretary Oregon Conference of City Planning Commissions

IT IS literally true, and not an exaggeration, that no single regular meeting of the City Council passes but there is shown a general or particular need of enactment of an adequate zoning law for the protection and conservation of property interests of Portland. This assertion is concretely demonstrated by the fact that immediately following upon the enactment of an ordinance establishing a city planning commission with power to zone the city and the perfecting of its organization, the very next meeting in fact, the question of the invasion of a fine residence district by the expansion of an already established garage business presented itself for adjustment.

The problem was officially referred to the planning commission with a request for immediate action. A meeting of the property owners interested was called. The situation was thoroughly canvassed from the point of view of the directly interested property owners, the needs of the district, and the right of an established business to expand legitimately. The existing rights of the business were given consideration. The maintenance of a residence district unmarred by the blemish of an unsightly garage structure was secured. The demoralization economically of an entire residence neighborhood, with the corresponding depreciation of property values, was prevented.

At the very next meeting of the Council two other petitions, similar in nature, were before the Council. One was settled without reference to the commission in what must be termed a high-handed way, in view of the manner and method of the proceeding. The property owner came before the Council without previous knowledge of opposition to his project. When he learned of it he agreed to abide by the decision of the planning commission without appeal. The steam roller method of voting was applied and the petition was denied.

The property owner had no chance to demonstrate his case. The public was given no opportunity to judge of the merits of the petition. Two of four members of the City Council present said they knew none of the facts necessary to a judgment. A member of the city planning commission was a personal witness to what he believed to be the demolition of the entire structure of the city planning commission and was hardly restrained from putting in his resignation right there and then. By the decision, but one side only was satisfied, when, in all fairness, both sides might have been. In these two concrete but really minor instances we have the entire problem of the value of zoning and city planning.

Portland's industrial, commercial and residential development in the main has been along lines of least resistance. This is due to the topographical fact that the city is surrounded by hills and bisected by a river. The waterways and natural ravines offered the only available avenues of entrance into Portland. These things determined the lines of her principal streets and the center of her commercial activities. Further, the industries of the city were most naturally water and rail transportation, lumber and sawmills. The city's industrial activities are now expanding and daily become more varied.

The temptation is to seek the cheapest sites, notwithstanding the fact that This is not the best principle to follow in most instances. These new industries are the beginnings of an eventual manufacturing development. The lesser industries that follow a natural increase of population are seeking locations. Docks, coal yards, oil tanks, garages, neighborhood stores, laundries, apartment houses, the forcing back of residences by industries and the segregation of the retail office buildings, banking and wholesale house districts are daily injecting themselves into the problems of shifting centers and the disturbance of values, whether it be to increase or depreciate them. Reaction and action are as equal in this as in all general laws.

Portland is now confronted with definite growth along commercial, industrial and transportation lines. All building now must be planned on future needs and with faith in the city's ultimate development. We must build bigger and better buildings than the moment's needs justify. An adequate zoning plan is no longer a question for discussion. Immediate action must be taken for the conservation of present uses. The assurance to the investor that values will be stabilized, as far as the judgment of the city can foretell its future, is essential.

The growth of the city must no longer be left either to chance or to the judgment of the individual property owner. There must be no struggle between groups of property owners who may find it to their immediate pecuniary interest to compete with each other in establishing new centers of values. No longer may chance be the controlling factor in city growth.

NORTH BRANCH LIBRARY

Joseph Jacobberger, Architect

Awarded honorable mention as a notable example of architecture in Portland.

Awarded honorable mention as a notable example of architecture in Portland.

GRESHAM BRANCH LIBRARY
Johnson & Mayer, Architects

A Time for Optimism

By J. P. NEWELL, President Portland City Planning Commission

THE period of transition in business from war to peace is one of doubt and uncertainty. The feverish activities of war industry make the quieter and less profitable pursuits of peace seem unattractive. With costs at the utmost limit, the manufacturer faces the prospect of a falling market. He cannot produce beyond the amount of his immediate sales unless the price of labor can be reduced. The laborer faces a cost of living hitherto unknown to this generation. He cannot consent to a reduction in wages unless it is preceded by a fall in prices. Houses are needed, but no one can build at war prices, and sell or rent with profit after wages and prices have dropped again to a normal level.

Into this uncertainty comes the City Planning Commission and proposes that every property owner should set himself to considering the future of his neighborhood, studying its prospective growth in the light of its past development, determining what should be business property, where hotels and apartments, factories and warehouses are to spring up. He will take note of the assessment rolls with their steady increase in values. He will think of vast railroad terminals, improved street car service, new bridges and arteries of communication. All this, not at the solicitation of a real estate booster with lots to sell, but in company with sane and conservative business men, his own neighbors, who are planning the future in the light of the past. Can any man do these things and remain a pessimist?

As the work of city planning proceeds, the spirit of optimism will spread. As men contemplate the manner in which our city has grown from the frontier village of fifty years ago to its present proportion, they will reflect that the same forces which made this growth are still in operation. The demands and opportunities of commerce, manufacturing and agriculture are still here, and Portland will remain the center of these activities.

Portland Certain to Remain a Large Trading Center

By HUDSON B. HASTINGS
Professor of Economics, Reed College

THE future of the city of Portland as a stable, growing city is definitely assured. The underlying causes of development of the city, up to the present, have not only not ceased to bring about a further growth, but they have in reality just begun to operate.

The most important factor in the growth of cities has been trade. In nearly all lines of goods the collection and distribution of the products of agriculture and industry can be most economically and satisfactorily handled by means of some type of wholesaler. For any given region, the city in which these wholesalers will find it most advantageous to locate will be situated somewhere near the geographical center of such region, its exact location depending on transportation facilities.

A study of the topographic map of the Pacific Northwest reveals Portland as the inevitable location of the trading center of the largest and richest regional unit. The rugged nature and altitude of the divides between the river basins make it certain that both rail and water transportation will center at the same place. Situated at the junction of the great Columbia and Willamette river basins, with their corresponding railroad systems, the location of the trading center of this large area is certain to remain at Portland.

The size of a trading center will depend on the development and growth of the surrounding country, and a study of the facts shows that the development of the potential and natural resources of Portland's trading area has hardly begun.

In agriculture the facts are that in Oregon the lands now under cultivation total about 4,930,000 acres, whereas the total tillable lands of the State amount to about 21,350,000 acres. Standing timber constitutes the greatest single natural resource of this region. It has been carefully estimated that there are 403,213,000,000 feet of merchantable timber in Oregon and the cut in 1914 amounted to only approximately 1,345,000,000 feet. The above facts give some idea at least of the possible development of the area within trading radius of the city of Portland.

Another primary cause of the growth of cities is manufacturing. Up to the present time manufacturing in Portland has been for the most part confined to utilizing the raw materials produced locally in greatest abundance, such as wood, grain, and livestock. The local market has not been large enough to enable prospective manufacturers in many lines of industry to successfully compete with the big Eastern concerns. With a comparatively small gain in rural population the critical stage for a satisfactory manufacturing market will be passed and new industries will be rapidly established. The very large undeveloped water power of this region, the improvement of the harbor facilities, the utilization of the Panama Canal and the new merchant marine of this nation will all be strong factors in developing manufacturing plants with world markets.

The fine climate has always been a favorable influence on the growth of Portland as a residential city. Many other favorable factors have developed in recent years, such as the marked increase in the educational and recreational facilities, the elimination of the liquor evil, the hard-surfacing of city and State roads, etc. The definite continuation of the programme for permanent highway construction, for which $10,000,000 in bonds has just been made immediately available by the Legislature, insuring practically a like amount from the counties, will develop the rural districts and bring an ever-increasing number of tourists to the State to enjoy its wonderful scenery, many of whom will remain as permanent residents.

Thus all factors combine to promote the continued growth of Portland and the city should be prepared to direct this development so that the health, prosperity and happiness of its citizens may be promoted and conserved to the utmost.

COUCH SCHOOL

F. A. Narramore, Architect

Awarded honorable mention as a notable example of architecture in Portland.

COUCH SCHOOL, PORTLAND, OREGON
F. A. Narramore, Architect

Awarded honorable mention as a notable example of architecture in Portland.

MOOSE HALL, PORTLAND, OREGON
Houghtaling & Dougan, Architects

Awarded honorable mention as a notable example of architecture in Portland.

PAUL MURPHY RESIDENCE
Lawrence & Holford, Architects
Awarded honorable mention as a notable example of architecture in Portland.

Zoning the City—Portland's Most Urgent Need

By CHARLES HENRY CHENEY, Member American City Planning Institute.
Consultant to the Portland City Planning Commission.

DURING the past five months it has been our duty and privilege to take stock of Portland, a city fuller of people than it has ever been in its history, in need of thousands of new homes, greater industrially on account of the war than could have been otherwise anticipated in a number of years, and facing a reconstruction period full of opportunity and almost sure expansion in all lines, which nothing short of a catastrophe greater than the San Francisco earthquake and fire can thwart. How to make the most of the situation, how to use to best advantage that wonderful power of co-operation, which through the cruel necessity of war we have learned that we possess to a most powerful degree, how to handle the city's growth in a more thorough, practical, sensible, business-like way than we have ever done before, is the problem that confronts us.

In taking stock of Portland and in analyzing the situation it is necessary both to face all the facts and to take advantage of the successful methods of handling similar situations in other cities. While there is not space here to give more than a brief outline of some of the findings to date, the facts developed should be sufficient to show that the use of practical city planning methods is a kind of insurance that Portland can well afford to take.

To those who would say that city planning should have been done years ago, it must be recalled that Portland, like all other coast cities, is still very young in development, size, and in the seizing of its opportunity.

Admitting carelessness and lack of planning in the past, the least that can be done is to make the most of the future.

Industrial Growth and Development

While there seems to be a general realization of the importance of encouraging in every way possible the establishment of new industries in Portland, and various agencies have been working towards that end, there exists a very evident lack of unified efforts and for this reason Portland seems to be getting much less of new payrolls, increased prosperity and wealth than this city is entitled to.

Evidently, if all development agencies can agree upon one general plan and each work toward it, from a different angle if necessary, but always to complete a definite part of a general programme, much greater and more profitable accomplishments would be guaranteed.

An "ultimate plan" for the industrial districts of Portland is the urgent thing to work out. Evidently this cannot be permanently rigid—it must be elastic, one to which each improvement made by the city, the Dock Commission, the Port Commission, or by large industrial concerns, can hitch up, thereby deriving additional facilities for doing business, as well as cutting down overhead expense, through the great saving that comes from well linked up means of transportation, hauling streets, paving and utility services. Railroad men and industrial managers in Portland admit that existing facilities have largely been put in on a temporary basis, and that a great economy could result from the adoption of such an ultimate plan, even if only small pieces of this plan could be economically constructed at a time. Such an ultimate plan would be subject to elaboration and amendment, as times and conditions change in succeeding decades, but its very existence, if conceived with a reasonable and practical framework, would tend not only toward great savings, but should also act as a strong inducement to new plants and capital seeking a profitable location on this coast.

Any such ultimate plan for industrial district development of Portland to be acceptable must depend upon reasonably attainable and properly worked out successive steps of accomplishment. It should be clearly understood from the first that the City Planning Commission and the manufacturers anticipate only a gradual realization of it. By conservative and practical steps the urgent portions of it can then be executed to the greatest benefit of the city, and each part completed will be that much more of a finished whole.

The making of an ultimate plan of industrial development will require continued study and cannot be laid out in full until a number of important factors of the situation are cleared up. These factors are, principally, the determination of the location of the industrial zones, by conference with the industrial establishments and adjoining land owners: the determination of ultimate clearing, classification, and freight yards, team tracks, and freight terminals; determination of the major street plan of hauling and traffic streets; improvement of the transportation of industrial workers to and from their work and their homes, and the general expansion of docks and water transportation facilities necessary. It is to be understood that all plans developed will suggest a practical basis for their being carried out.

Improvements Developed as Necessary from the Industrial Survey

In the industrial questionnaire sent out last October, 215 concerns of Portland having ten or more employees were asked the question, "What disadvantages has Portland over other coast cities as an industrial

center?" These business men are very frank in their answers, the more important of which may be generally grouped as follows:

Disadvantages Reported

"Almost none physically—location is excellent; climate unsurpassed; water connections with the ocean good. No city is greater than her citizens. No teamwork. Portland is too well satisfied with herself and has not yet learned the meaning of teamwork."

"Narrow streets, poor harbor, no steamship lines, not enough competition among bankers, exceedingly poor country roads."

"A lack of raw material to be used in steel and iron construction; suggest that after government orders for ships are completed, that Portland shipbuilders build ships on their own account and establish a merchant marine between here and some foreign port where wheat and lumber can be shipped and iron brought back."

"Lack of industries to work up overseas cargoes of raw products since maritime commerce cannot be established without return cargo coming to this port."

"Our raw material being copra (dried cocoanut meat) and produced in the South Sea and Phillipine islands, is brought to this harbor in returning lumber carrying vessels, and it is desirable for us to locate on the water front so that discharge can be taken direct into our storage bins. We have investigated the water front conditions and find there is very little dry land available, in our opinion, that is not held at prohibitive prices. San Francisco is the copra market of the United States and we are advised that water front property in the Richmond district can be purchased as cheaply as asked for available waterfront on the Portland harbor. If this is the case, there is very little inducement for this company to pioneer at this place. In our survey of the land at River Water Front, we find that it merely consists of a series of swamps and overflow land and our opinion is that it will have to be bulkheaded and filled in before industries of any magnitude locate here which desire waterfront. This frontage in our opinion is held at fancy prices and unless something is done, either in filling or scaling of prices, it will be a long time before the river front is utilized."

Shipping Problems Reported in Survey Answers

"Need line to Alaska and other steamer lines. This is quite a disadvantage."

"None, if the moneyed men would invest in ships."

"The opposition of the transcontinental lines, who disregarding the interests of the consumer and the producer desire to make Seattle their western terminal and the opposition of capital now invested in docks and transportation facilities in the City of Seattle."

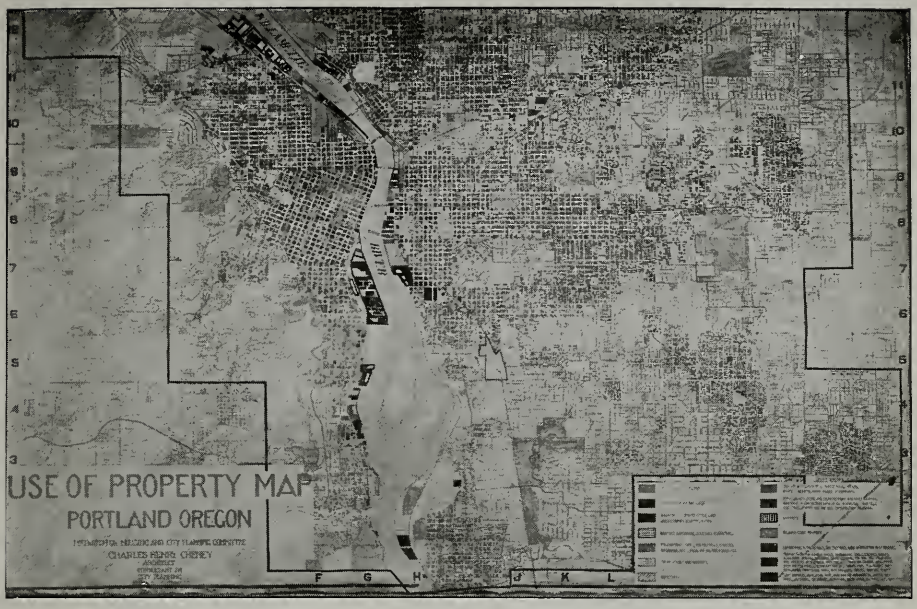
Lack of a Definite Plan Voiced

"Lack of co-operation between business men and inflated real estate values."

"Not enough inducements offered to new enterprises to establish."

"Disadvantages of the past have been lack of spirit to encourage manufacturing by giving financial support and the habit of the people to invest their money in vacant lots; this condition is rapidly changing and the results are already evident."

"None; city is ideal from every viewpoint."



USE OF PROPERTY MAP, PORTLAND CITY PLANNING SURVEY
Chas. H. Cheney, City Planner

(This map—in three sections—shows every building in the city, in different colors, according to use. The natural zones stand out very plainly in the original, but are not so distinct here, as the color does not reproduce.)

While these answers were sent in before the signing of the armistice, they apply in general as well today.

Analysis of the Answers

These answers cover a wide range of industrial troubles here and state the case of the difficulties faced in Portland. In my opinion, a very large proportion of these difficulties can be eliminated and the rest greatly discounted, or reduced to a minimum of loss on their own account, by the adoption of practical city planning methods.

The best teamwork is futile without a plan to work to. The above quoted answers of this city's principal manufacturers are a little too hard on the men here who have the will to do but have not yet found the plan, perhaps for lack of understanding of the necessity of a comprehensive scheme of industrial development.

The first fundamental basis for any city plan is a well worked out zoning or districting system of building regulations, limiting and protecting the location of new industries and industrial housing, as well as business districts, and preventing congested and overhigh structures, or the covering of more of the lot than is safe for health, light, air, fire protection, convenience or public welfare.

What Definitely Established Industrial Zones Mean

Any such zoning plan or regulations would leave existing locations

and uses of buildings as they are, only requiring new plants to settle in definite industrial zones, where the city and its manufacturers can combine, after agreement as to the most appropriate locations of such zones, to put in every possible fire protection, unlimited spur tracks in the sidewalk areas, elevated sidewalk delivery platforms where required, wide heavy hauling streets, large sewers for industrial wastes, etc.

The natural location for such zones will be adjoining and including the present industrial portions of Portland, in general along the two rivers.

To give the most advantageous facilities the city will moreover begin with reasonably small districts and make a few really well developed centers. To spread out thin is poor policy, easily matched by other competing industrial centers. This does not mean that there should be a favored center. A number of industrial districts can be gradually developed in a city of this size at the same time. But beginnings must be made somewhere and caution must be exercised not to create larger zones or districts than can reasonably be given spur tracks, wide hauling pavements and the other special facilities needed.

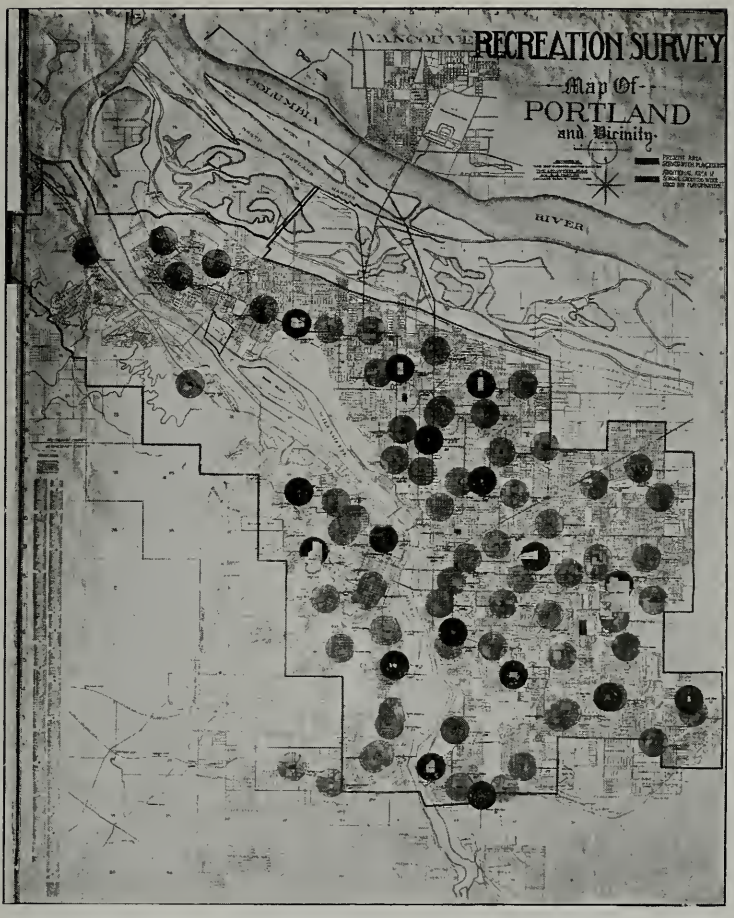
Conferences on Location of Industrial Zones

Conferences will be started immediately with the industrial managers and property owners of the city as to the best location for such industrial districts.

Industrial plants, warehouses, laundries, etc., are offensive neighbors in residence sections, so much so in fact that cities all over the country are excluding them by ordinance from residence districts. The industries of this city are entitled to a safe place, where they can grow and carry on their trade to the fullest extent, secure from the protest and annoyance of small home owners.

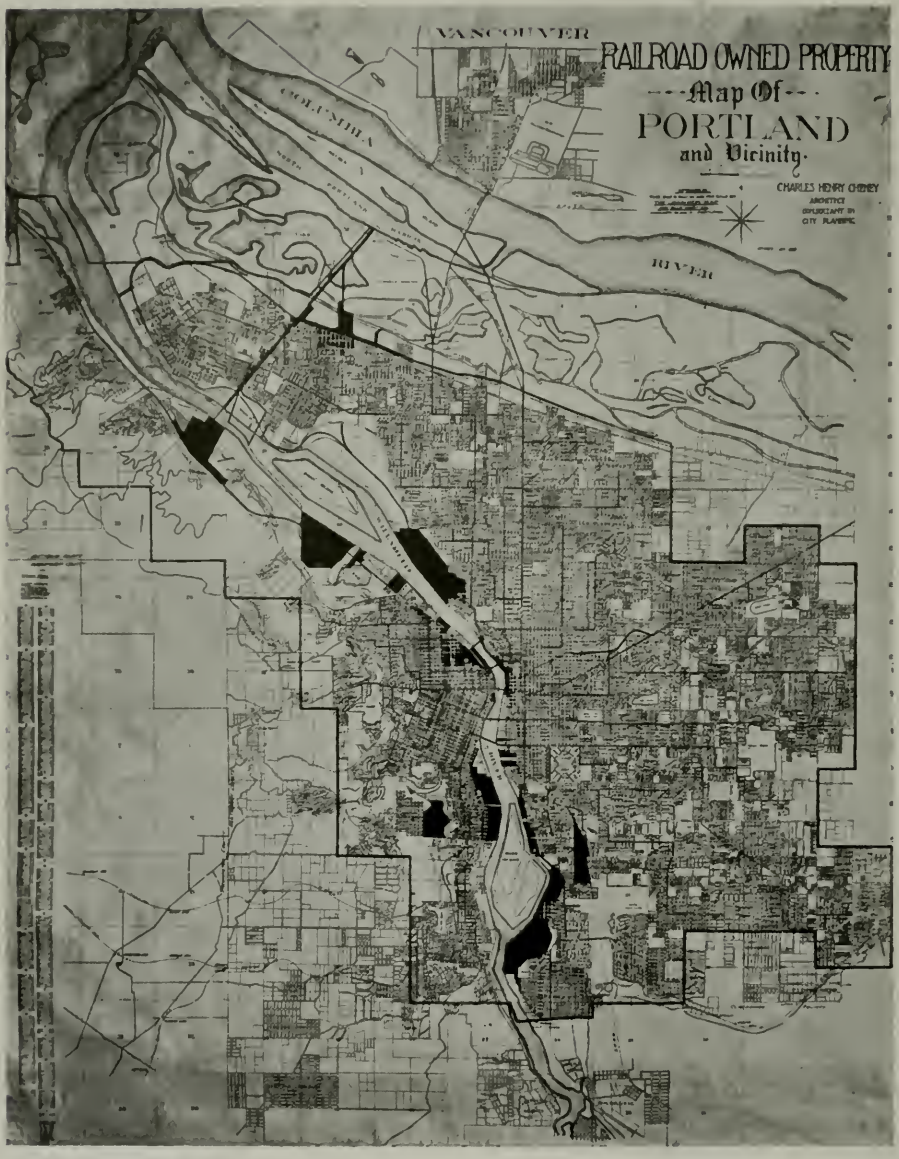
The small home owner, the tenement or apartment, the cheap hotel, are also bad neighbors for live industries because they fight wide heavy hauling pavements, spur tracks in the sidewalks and other necessities to modern up-to-date business. They also are continually preying on the need of adjoining industries to expand and buy them out, meanwhile making no repairs and permitting slum conditions to develop. Anyone who has looked over the industrial sections of a number of cities will recall that the slums are generally on the edge of the industrial district, where the uncertainty of the future use of the property has made low rents and an influx of down-and-outers.

To meet this evil, Alameda and other cities have established industrial zones in which no new dwellings may be built. The Berkeley Manufacturers Association have asked the city council to create such an unhampered industrial district over two miles long for them along the west water front of that city, and a comprehensive zone ordinance embodying this provision is now up for final passage. They pointed out that if industries are excluded from residence and business districts in the larger portion of the city, manufacturers are entitled to have reasonably small parts of the city restricted to their use, in which new dwellings cannot locate.



ONE OF THE DATA MAPS, PORTLAND CITY PLANNING SURVEY
Chas. H. Cheney, City Planner

(The Recreation Survey Map here reproduced shows in black the areas of Portland within one-quarter mile of existing municipal playgrounds (the ordinary distance children will voluntarily go to a playground). In gray are shown the additional areas of the city which might be served if arrangements were made to utilize existing school playgrounds after school hours, only a few of which need any enlargement whatever.)



ONE OF THE DATA MAPS, PORTLAND CITY PLANNING SURVEY
Chas. H. Cheney, City Planner

(Showing the large waterfront areas controlled by the railroads.)

Portland wants no slums and the industries here are entitled to restricted and protected districts free from dwellings and the different conditions which they require.

One of the present drawbacks to industries in Portland is undoubtedly that they are trying in most parts of the city to exist in neighborhoods and under conditions controlled by residence ideals and requirements. Meanwhile their competitors in many parts of the country are working in unhampered surroundings, with every facility provided to cut down overhead costs of delivery, haul and production.

This can be remedied to a large extent in Portland by the early passage of a zone ordinance. A few existing dwellings may have to be included in the industrial districts to be established here, but they will eliminate themselves in time. The least that can be done is to look well to the future and prevent the building of new dwellings and hotels in areas that are strictly industrial.

Portland is not as yet badly spoiled, but there is plenty of evidence here of the evils of the present hap-hazard development.

Last year when the Smith & Watson Iron Works needed to expand, the owners of the Harrison Hotel on Front street protested that this important industry was a nuisance to the hotel business and ought not to be permitted in the neighborhood. This industry happened to be engaged on Government war work at the time and was able to go ahead on this plea, but otherwise would have been liable to permanent injunction.

Many other flagrant examples of the deterrents to industrial growth in this city could be cited. Until definite boundaries are established for more or less permanent industrial districts in Portland, who will feel safe to make large investments of a permanent nature, or who can guarantee more or less permanent employment to industrial workers—the regular payroll that must be the foundation for the city's prosperity?

Industrial Zone Boundaries

With so much direct evidence of the desires of the industries themselves, the City Planning Commission is ready to take up the question of the boundary locations of these zones. This will be done by appointing committees of property owners in the existing industrial sections and working out with them during the next five or six months the most advantageous lines for their district development, as well as the other facilities that they should have. When agreement has been reached with the commission on these matters, these district plans can be pieced together with the residence and business districts in a final comprehensive plan to be presented to the city council next fall for adoption by ordinance.

How Hospitals Depreciate Residence Neighborhoods

A recent statement was given us by Assessor Henry Reed in regard to the depreciation of residence property values whenever a public or private hospital is built or intruded into a strictly residence neighborhood. The year after the Good Samaritan Hospital was built, all the property facing it was reduced ten per cent in assessment. Like reductions have had to be made for property adjoining the hospitals at Eighteenth and Hoyt streets, Twentieth and Marshall streets, and in other parts of the city. These represent not only a serious loss to the owners, but a permanent loss of revenue to the city, practically all of which is needless. The establishment of a few quiet and appropriately located districts for all new hospitals will at least cut such losses hereafter to a minimum.

Typical overpaved street and modern narrow roadway of the new type for minor residence streets. Great saving in paving costs can be made when the residence zones are definitely established and major and minor streets determined upon.

Steps Necessary in Zoning Portland

Three kinds of districts will have to be established.

Use Districts are necessary to prevent the scattering and intrusion of inappropriate and destructive uses of buildings and property, which make uncertain and decrease property values, and for other reasons previously stated.

Height Districts are necessary to maintain proper light and air and for economic reasons. Thomas Adams says, "In our Canadian cities the sky-scraper is the step-brother to the vacant lot, only that for every sky-scraper there are probably a hundred or more vacant lots. This is an unhealthy and uneconomic condition and is causing us to try and get a more even and less scattered form of development by restricting the use and height of buildings."

Area Districts are necessary to prevent overcrowding, and for the protection of residence neighborhoods particularly.

The establishment of Use Districts alone would not fully accomplish the protection necessary. Height and area district regulations are equally necessary to prevent congestion and to secure light and air. Each is an inseparable supplement of the others. As long ago as 1909 the U. S. Supreme Court upheld the City of Boston in its right to establish a lower height limit for outside residence districts and a higher limit for downtown business districts.*

The degree of use, height and area district regulations necessary will vary according to locality, tendencies of developments, and natural conditions. From the evidence so far gathered, we believe the following classes of these types of districts will be needed to give adequate protection to all parts of the city.

This ordinance would apply to new building permits only, existing buildings and uses are not to be affected.

* Welch vs. Swasey, 214 U. S. 91, 29 Sup. Ct. 567, decided May 17, 1909.

Outline of Proposed Zone Ordinance Adopted by City Planning Commission, February 19, 1919

The Use Districts proposed are as follows:

Residence Districts of Class I—Single family dwellings only.

Residence Districts of Class II—Dwellings, flats, clubs, dormitories, apartment houses, hotels without stores, railroad shelter stations.

Business and Public Use Districts of Class III—Retail businesses, trades and professions, including residences of Classes I and II.

Business and Public Use Districts of Class IV—Schools, public and semi-public buildings, churches, playgrounds, greenhouses and nurseries; parks, including single family dwellings.

Business and Public Use Districts of Class V—Retail business of Class III, plus public garages, dyeing and cleaning, wholesale business; oil supply stations, including any residence, business or public use of Classes I, II, III or IV.

Business or Public Use Districts of Class VI—Hospitals, sanitariums, charitable institutions, including any kind of residence of Classes I or II.

Industrial Districts of Class VII—Ordinary, not obnoxious, factories, warehouses and industries, including any business use.

Industrial Districts of Class VIII—Obnoxious and odor producing factories, including any kind of business use.

Height Districts proposed are:

(They may cover a number of different classes of Use Districts.)

Two and One-half-Story Districts—Limited to a maximum of 2 stories and finished attic, not to exceed a total height of 35 feet to finished ceiling line of attic floor, above the curb.

Four-Story Districts—Four stories not to exceed 50 feet.

Six-Story Districts—Six stories not to exceed 70 feet.

Eight-Story Districts—Eight stories not to exceed 90 feet.

Other Height Districts—If found necessary after conference with business interests.

These height limits would apply only to new building permits.

Two classes of Area Districts are proposed for the protection of the Residence Districts of the city:

A Districts—Rear yard minimum depth at any level equal to 1/3 height of building. Residence not to cover more than 65 per cent of lot. (Practically as in the Housing Code.)

B Districts—All buildings to be detached and rear yards to have a minimum depth equal to 5/12 of the height of the building. Residences not to cover more than 50 per cent of the lot.

The Basis of Zoning

Zoning in Portland should be based on the following fundamental principles:

Provision for ample light and air is a prime essential in building regulations.

Districts should be of any size advisable to meet local conditions—as small as a single lot in some cases.

In each section of the city the building regulations should be adapted to the special requirements of that section.

In general the two sides of a street, block by block, should be made in the same class of district and the dividing line of districts should come down centers of blocks rather than in the centers of streets.

As a general rule, it is desirable to treat all buildings on both sides of the street in a given block, according to a uniform regulation. There should be a substantially uniform contribution from each owner to the light and air of the block. Block ventilation is essential to well ordered development. Rear yards should be required wherever buildings come back to back. Over-high buildings are a menace in the business districts, as they cut off the light and air of their neighbors, cause undue street congestion which may interfere seriously with the movement of fire apparatus and endanger the occupants of high office and loft buildings.

Existing Tendencies Must Be Followed

In determining boundaries, "reasonable consideration should be given, among other things, to the character of the district, its peculiar suitability for particular uses, the conservation of property values, and the direction of building in accord with a well-considered plan." (New Oregon State Zoning Act, passed February, 1919.)

Uses and Heights of Existing Buildings in Portland

Evidence of present tendencies in Portland has been carefully collected during the past three months and entered on the Use of Property Map, and the Heights of Building Map, and is further shown in the following table:

Type of Building—	2½ Story and Under	3 Story	4 Story	5 Story	6 Story	Over 6 Story	Total	centage of Total
Single family dwellings	32,643	8	...	...	...	...	32,651	82.4%
Flats, tenements and apartments, hotels, boarding and lodging houses, clubs	1,890	214	109	28	6	12	2,259	5.6%
Hospitals and charitable institutions	65	3	2	3	1	...	74	0.1%
Stores, restaurants, offices, trades, theatres, halls, amusements	2,040	314	56	19	24	30	2,483	6.2%
Public buildings, schools, docks, churches, missions	395	20	4	1	...	1	421	0.9%
Public garages, greenhouses	161	5	2	...	...	...	168	0.4%
Industries, stations, larger trades, warehouses, docks, stables	1,355	110	53	15	7	14	1,554	4.4%
Totals	38,549	674	226	66	38	57	39,610	100. %
Per cent of totals	97.4%	1.7%	0.5%	0.16%	0.10%	0.14%	100%	

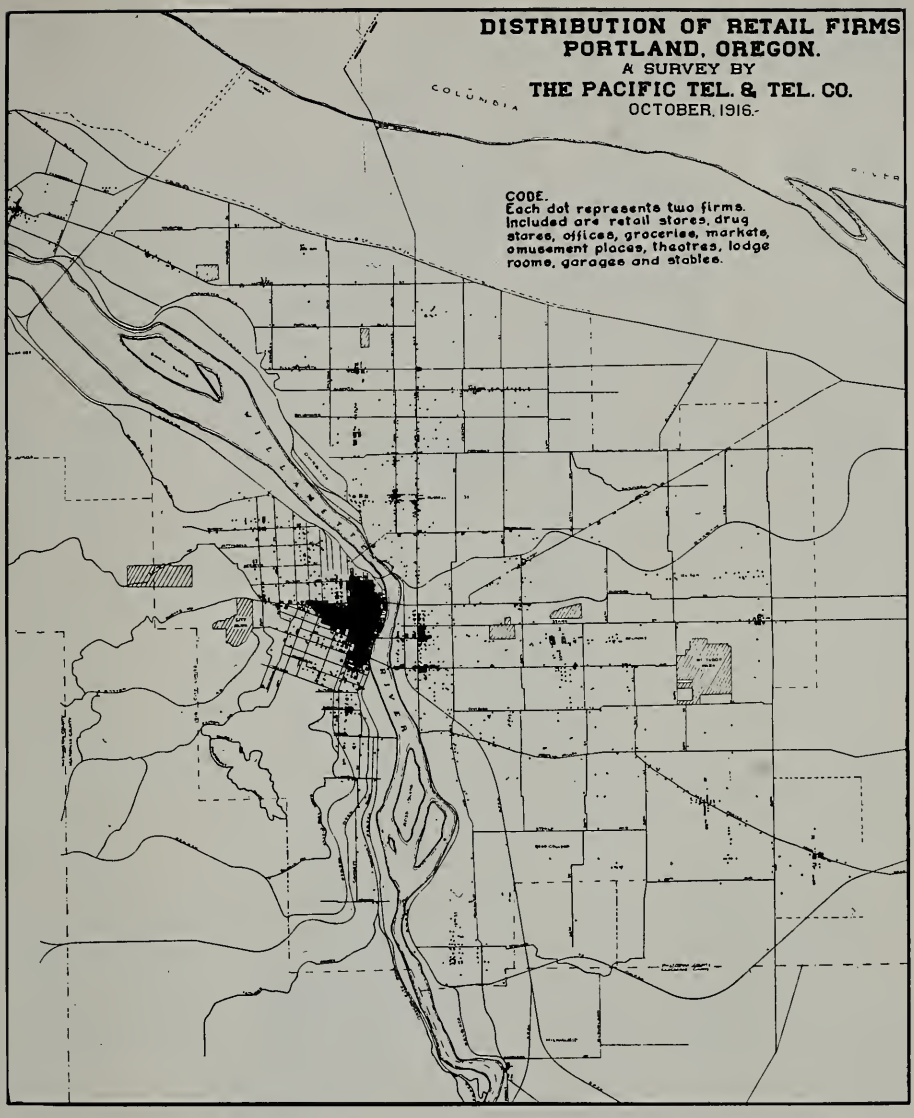
NOTE.—This is a count of buildings, not of rooms. For example, one store building might contain a large number of independent stores, apartments, flats, or both, but is counted as one building only.

These figures do not yet include all buildings in the city, but are typical of them.

If this evidence is properly taken into account and caution exercised by the city not to be arbitrary, a thoroughly comprehensive zoning plan can as safely be adopted by Portland, as has already been established in St. Louis (1918), New York City (1916), and in a large number of California cities (1909-1918).

The experience of other cities is valuable. The following from the City Attorney of Los Angeles seems pertinent because he secured the decision in the U. S. Supreme Court in the famous Hadacheck case, previously quoted:—

"It is my opinion that it (zoning) will prove practical only in cities where natural development has impressed certain uses upon certain portions of the city to the practical exclusion of other uses. The city having in a way found itself may, by legislation, restrict the development along the lines already generally established, so that the character of improvements in one neighborhood may not intrude to the detriment, within the meaning of the police power, of the general character of improvements in another neighborhood. This is the principle underlying the Los Angeles zoning law, and in my opinion is the only principle upon which safe city planning can be based."



(Courtesy of Pacific Telephone and Telegraph Co., R. S. Masters, Development Engineer)

A very interesting Data Map showing how the stores of the city have naturally centered together in small local business districts, with one large downtown business center. A zone ordinance will help this natural building up of strong centers while deterring strays.

ZONE PLAN OF ALAMEDA
ADOPTED FEBRUARY, 1919
CHAS. H. CHENEY, CITY PLANNER

The Comprehensive Zone Ordinance Adopted by Alameda, California

By CHARLES E. HEWES, City Manager

WHAT is probably the most completely worked out and comprehensive zone ordinance so far adopted in the United States was passed by the Alameda City Council on the recommendation of the city manager and advisory city planning commission in February, 1919. Alameda is a city of approximately 35,000 population, with about four miles of industrial waterfront along the north side of the city, and recreation beaches on the south side, the main portion of the city being a large island, with a second undeveloped area of several square miles of farm land, on Bay Farm Island, to the southeast.

After a year's careful study of the tendencies of growth in all parts of the city and the preparation of Use of Property and Heights of Buildings maps, the city's consultant in city planning, Mr. Chas. H. Cheney, held neighborhood meetings and conference in each of the principal districts and centers of the city, some forty conferences in all being held, at which an agreement was obtained as to what protections would be for the best interest of property owners in each neighborhood. These neighborhood recommendations were then combined together in a general zoning plan and the whole put up for public hearing as the preliminary form for the zoning regulations. So well had the preliminary work of education been done, however, that there were practically no objections to the ordinance, either at this time or at the later hearings after it was introduced before the city council.

This ordinance is expected to stabilize property values, prevent the deterioration of residence districts, help business by requiring it to be concentrated at established centers, and by making a definite place for industries to locate and invest where they will be safe from protest and interferences.

It combines the best features, we believe, of the Los Angeles, St. Louis and New York ordinances and is similar to the zone ordinance adopted in Palo Alto (population 6,000) in August, 1918, and to the proposed new Berkeley and Fresno ordinances.

The ordinance applies to new building permits only, existing buildings and uses of property not being affected, even though they fall outside the respective zones proper for them.

Eight Classes of Use Districts Found Necessary

Eight classes of Use Districts were found to be the minimum that would cover our requirements. Although it is desirable to have as few classifications as possible, we found that we could not cover Alameda's needs with less.

The Use Districts established are as follows:

Class I Residence Districts permit single family dwellings only. The Class I Districts were established to cover about two-thirds of the residence area of the city.

Class II Residence Districts permit any kind of dwellings, flats, dormitories, apartments, hotels without stores. About a third of the city, in which flats and apartments were already established, was placed in this classification.

Business and Public Use Districts of Class III are for ordinary better class retail business, trades and professions, including residences of Classes I and II. Two principal business centers of the city, on Webster street and on Park street, each some six blocks long, were put into this class, with smaller business districts of Class V adjoining them.

Class IV Business and Public Use Districts are for schools, public and semi-public buildings, churches, playgrounds, green houses and nurseries and parks, including single family dwellings. All such institutions throughout the city have been placed in small districts of this class, comprising only the size of the lot which they occupy.

Class V Business and Public Use Districts are for all types of business of Class III plus public garages, dyeing and cleaning establishments, wholesale business, warehouses, oil supply stations and any kind of residence or public use of Classes I, II, III or IV. They comprise small areas adjoining the Class III centers and also many little local business centers at crossroads in residence sections.

Class VI Business and Public Use Districts are for hospitals, sanitariums, charitable institutions and any kind of residence of Classes I and II. As yet no districts of this class have been assigned—any new institutions of this type will have to have a public hearing and secure approval of the neighborhood and amendment of the zoning plan before locating.

Industrial Districts of Class VII are for all ordinary, non-obnoxious factories, warehouses and industries, including any business use, but excluding new residences of any kind. A district a half mile wide and about three miles long, along the north waterfront, was established in Class VII, where the present industries of the city are located. Another industrial district was also provided on Bay Farm Island, for future development. The first is identical with the previous industrial zone established by ordinance a year ago, which also prohibited new dwellings to go in and block the growth of industry.

Industrial Districts of Class VIII are for obnoxious and odor-producing factories, including any business use, but excluding new residences of any kind. One district of this kind only has been established now, and on the leaward side of the city, where the prevailing winds will blow smoke and odors away from the city, across the bay marshes existing to the eastward.

Building Height Limits Established.

The ordinance also provides for protecting the various parts of the city from the dangers of overcrowding, and depreciation of property values by the building of scattered over-high structures. The following Height Districts were therefore established, carefully arranged to protect the existing tendencies of growth:

Two and a Half Story Height Districts require all new buildings to be limited to a maximum of two stories and finished attic, not to exceed a total height of 35 feet to the finished line of the attic floor above the curb. As over 99 per cent of all the buildings in the city were found to be of this type or less in height, the city felt justified in maintaining this tendency. This height limit was placed upon the residence districts of Class I.

Three Story Height Districts limited to a maximum of three stories not to exceed forty feet to the finished ceiling line of the third floor, were established to cover the Webster street business district and residence districts of Class II, for hotels, flats and dwellings.

Four Story Height Districts are limited to four stories, not to exceed fifty feet to the finished ceiling line of the fourth floor. One district of this kind only was established for the present, to cover the principal business center of Classes III and V on Park street.

Eight Story Height Districts limited to eight stories, not to exceed ninety feet to the finished ceiling of the eighth story, were established to cover the industrial districts of Classes VII and VIII. This is perhaps a higher limit than necessary. The city's consultant advised four stories, which had been the limit in our previous industrial zone ordinance of 1918. Some of the Planning Commission could not understand the need for any limits and the compromise height of eight stories resulted.

Towers, tanks, chimneys, spires, etc., covering an area of not more than 15 per cent of the lot, are allowed to build up to any height.

Area Requirements to Insure Light and Air.

In Industrial Districts of Classes VII and VIII, where windows are needed for light and air, a rear yard of not less than five feet must be provided.

In Business and Public Use Districts of Classes III, IV, V and VI all yards and courts, where required for light and air, must not be less in dimensions than required for tenement houses in the California State Tenement House Act.

In Residence Use Districts of Classes I and II yards and courts, of whatever use the building is put to, must be the same as for a dwelling in the California State Dwelling House Act.

A special class of "Home Area Districts" includes all Class I single family dwelling districts and provides that no lot may hereafter be covered more than 50 per cent. It was found that practically all of the dwellings in these districts now cover only from 20 to 25 per cent of the lot and that therefore this restriction would not be stringent.

Expect Ordinance to Be Amended from Time to Time.

Although it is less difficult in a small city, I am glad to say that there are no "unrestricted districts" or unfinished portions of the zoning work in this ordinance, such as have been left in some of the larger cities. Alameda, therefore, has complete control of the situation. However, new locations for industries, particularly adjoining railroad lines, and other changes of districts can be brought about by amending the ordinance and holding public hearings in a very short time. No such changes, however, can hereafter be made without the neighborhood being consulted, and none of the city is left in uncertainty. We expect the ordinance to be amended from time to time to keep pace with the needs of the city as it grows.

With the zoning of the city settled upon, Alameda now has a definite and exact basis on which to lay out a major traffic street plan. The minor residential streets are determined by the zones established, and can be paved with less costly and narrower pavements, with more parking accordingly. The fire limits of the city can be rearranged to only cover business districts and so not work a hardship on other areas. A sound basis for mortgage loans has been established, thus stabilizing land values

and making a surer and easier foundation for city assessments and taxation.

Zoning is a fundamental move in city progress which we anticipate a great deal of good from in Alameda.

* * *

Zoning Experience of New York City

NEW YORK CITY adopted a complete and comprehensive zone ordinance on July 25, 1916. Two years and a half of experience with such protections, which cover every block of the city as to use, height and bulk of new buildings and where they may go without injury to their neighbors, has only proved the wisdom of these regulations. The secretary of the New York Zoning Committee, Herbert S. Swan, in a recent statement says:

"In New York the testimony of real estate experts is almost unanimous that the adoption of the zoning resolution has stabilized land values. The effect of the zone plan has been particularly noticeable in the districts reserved for detached houses. In such districts there has been an increased demand for private residences since the enactment of the zoning resolution. The restrictions have resulted in a great improvement of real estate conditions in such neighborhoods. Where the prohibitions against objectionable uses of land imposed by restrictive covenants were formerly limited in their duration they are now permanent.

"Business streets, too, are feeling the wholesome effects of the law. Keeping business off residential streets means keeping it on business streets. Haphazard development hurts business property as much as it does residence property. The sporadic store invading quiet home streets not only demoralizes residential values; in decentralizing the shopping district it also disintegrates business values.

"Viewed in every way, the experience of New York has clearly demonstrated that no large city can afford to do without zoning.

Post-War Need for Zoning

"The individual's loss is also the public's loss. To the former the invasion of offensive uses spells depreciated values, increased vacancies, lower rentals, the calling of mortgage loans, foreclosure: to the latter, reduced assessments, unpaid taxes, tax sales.

"The present high cost of labor and materials emphasizes as never before the necessity of orderly building. With two houses worth as much as three several years ago, there is much more to be lost now than formerly through uncontrolled building.

"Mounting prices make it increasingly more necessary to conserve the value of all buildings, old no less than new, from premature and avoidable depreciation.

"Taxes on real estate were so heavy before the war that many cities, hard pressed for additional income, were already searching for new sources of revenue. The tax on land and buildings, it must be remembered, yields all the way from 30 to 70 per cent of the total municipal revenue in different cities. In the average city it yields 56 per cent. Under these circumstances it is quite evident that the stabilization of real estate values is of fundamental importance to the improvement of the municipal revenue system. After the war it promises to assume even greater importance. The tremendous financial demands of the war in forcing the national government not only to increase existing taxes but to impose many new ones has had the effect of shutting off many potential sources of revenue to the local governments and of throwing them permanently back upon the real estate tax as the continued mainstay of their revenue system."

RESIDENCE OF MR. T. H. SHERRARD
Wade Pipes, Architect

Awarded honorable mention as a notable example of architecture in Portland.

The Advance of Architecture in Portland

By JOS. JACOBBERGER, President Oregon Chapter, A. I. A.

AN architectural guessing contest has just been held in Portland. Besides being something quite unique, it is believed to have had a valuable educational effect in stimulating public interest in architecture. The present time has been deemed an opportunity to the profession to advance its cause. Little has been done in building during the past few years, with the result that much needed and delayed building construction is about to begin, being stimulated by appropriations by the State, county and municipal governments for various buildings. Again, we shall have the valuable experience of our returning soldiers, whose opportunities of observing and making comparisons of American against European architecture cannot but have some influence on future architecture. Should not, therefore, every effort be made to use any opportunity possible to interest the public to distinguish the better examples of architecture?

With that in mind, the Oregon Chapter, A. I. A., instituted a guessing contest to which the public was invited. Numerous prizes were offered to those making the guess nearest to the selection made by a competent jury of three architects and two laymen. The guesses were to include one guess for each type of a building:

First—Best example of Public Building Architecture in Portland.
Second—Best example of Semi-Public Building Architecture.
Third—Best example of Commercial Building Architecture.
Fourth—Best example of Religious Building Architecture.
Fifth—Best example of Domestic Building Architecture.
Five other examples of any kind of building.
Three notable examples of Landscape Architecture.
Two notable examples of Public Sculpture.
Five notable examples of Small Homes.

Posters announcing the contest were displayed in all the architects' offices, the Public Library, stores, etc., for two months prior to its close. After the report of the jury had been received, the following prize winners were announced:

First prize—Mrs. E. H. McCollister, 488 Harrison street.
Second prize—L. Hayes, 925 Gantenbein avenue.
Third prize—Mrs. Edwin Casswell, 791 Overton street.
Fourth prize—Mrs. A. C. Emmons.
Fifth prize—Mrs. Chester Cirslinski, 9516 Fifty-fifth avenue, S. E.
Sixth prize—Miss Induz Oxer, 395 Twelfth street, Ardway Terrace Apartments.

Small House Contest:

First prize—Mrs. E. H. McCollister.
Second prize—L. Hayes.
Third prize—Miss Indux Oxer.

Mrs. E. H. McCollister, the winner of two contests, was remarkable in guessing 10 out of 15 correctly.

The Oregon Chapter realizes that the chapter's standing before the public will be measured much by its service to the public. This being the trend of the times, the chapter has through various activities made itself felt, which is proved by the services it has been called upon to give.

A hasty and brief resume of some of its work shows that it has been engaged in assisting a War Emergency Housing Campaign, which but for the closing of the war might have developed into something substantial. The chapter, as a body, prepared some thirty-five designs of workers' homes, on which the talent of the architects was tested, we hope with a degree of success. We look about our city and see many districts covered with exaggerated and meaningless "bungalows." The fact that probably not more than one-half of one per cent of this work was done with the advice of the architect may lead us to believe that much service might be rendered in small house designing if the public could be led to appreciate architecture, large and small.

The chapter has been conducting a housing exhibition in a unique building—a neatly designed colonial cottage erected on one of the most expensive building sites in the city of Portland. This design is a contribution of the chapter.

The thirty-five designs of workers' homes, plus the added exhibition of photographs and drawings of homes erected by Portland architects, coupled with a series of lectures covering such matter as the relation of architect to client, moral value of home owning, domestic architecture, interior decoration, house furnishing, landscape architecture, accompanied with suitable slides for illustrating, were well received by the public, and well exploited by the public press.

The chapter was appointed by public officials to work out a Soldiers, Sailors and Marines Memorial scheme for the City of Portland, which bids well to be realized in due time. The chapter has offered its services in an advisory capacity to any public body that may have charge of erecting any soldier memorial in the State. It was given charge of the street decorations for the reception of returning soldiers. It has assisted in placing a substantial housing code in the City of Portland, and been instrumental in the creation of a City Planning Commission, wherein the value of the architect has been recognized by placing three members of the profession on the commission.

Expense of Building a Home Today Compared with Pre-War Cost

Compiled by A. W. SMITH, Architect, of Oakland

NOTE.—Figures given are approximate and based on actual contracts let by the author. The tables were prepared early in February, since which time there has been a tendency toward better prices.

LABOR COSTS ON A DWELLING WHICH BEFORE THE WAR COST $2,500

	No. of days	*Before War Rate*	*Amount*	*Present Rate*	*Amount*	*Increase*
Carpenter labor	70	$5.50	$385.00	$7.00	$490	$105.00
Plastering labor	21	6.00	126.00	9.00	189	63.00
Plumbing labor	5½	6.00	33.00	8.00	44	11.00
Painting labor	32	5.00	160.00	7.00	224	64.00
Hodcarrier labor	7	5.00	35.00	7.00	49	14.00
Cement workers' labor	6	4.50	27.00	6.00	36	9.00
Cement finishers' labor	2	6.00	12.00	8.00	16	4.00
Lathers' labor	8	6.00	48.00	8.00	64	16.00
Brick labor	1½	7.00	10.50	8.00	12	1.50
Electrician labor	2½	6.00	15.00	8.00	20	5.00
Sheetmetal labor	1½	6.00	9.00	8.00	12	3.00
Roofing labor	3	5.00	15.00	7.00	21	6.00
Patent chimney labor	½	6.00	3.00	8.00	4	1.00
Shade hanging labor	½	5.00	2.50	6.00	3	.50
Fixture hanging labor	1½	5.00	7.50	6.00	9	1.50
Mantel labor	1½	7.00	10.50	8.00	12	1.50
Sewer work labor	2	3.50	7.00	5.00	10	3.00
Mill work labor	25	5.00	125.00	6.00	150	25.00
	189	Av. $5.53	$1,031.00	Av. $7.22	$1,368	$337.00

The increased labor cost of $337 is an increase of 32 7/10 per cent.

COSTS OF MATERIALS AND SUBCONTRACTS, LESS LABOR COSTS ABOVE, ON A BUILDING WHICH BEFORE THE WAR COST $2,500

	Before War Cost	*Present Cost*	*Increase*	
Plastering and lathing	$185	$220.00	$35.00	Percentage of increase of material is 64 15/100 per cent, being practically double the increase in labor cost.
Painting and paperhanging	66	105.00	39.00	
Plumbing	142	205.00	53.00	
Brick and mortar	53	65.00	12.00	
Lumber	306	625.00	319.00	
Sash doors, glass and mill work	193	340.00	147.00	
Hardware and nails	63	90.00	27.00	
Sewer	13	25.00	12.00	
Electric	21	56.00	25.00	
Mantel	21	27.00	6.00	
Shades	14	23.00	9.00	
Fixtures	31	56.00	25.00	
Walks and foundations	41	55.00	14.00	
Roofing	38	54.00	16.00	
Sheet metal	9	22.00	13.00	
Patent chimneys	10	23.00	13.00	
Workmen's comp. insur. (3½ per cent)	36	*47.85	11.85	
Total	$1,242	$2,038.85	$796.85	
Add labor	1,031	1,368.00		
	$2,273	$3,406.85		
Add 10 per cent for contractors' profit and miscellaneous expenses	$227	340.68		
Cost	$2,500	$3,747.53		

*Increase on account of greater amount paid to labor.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

THE
Architect and Engineer
OF CALIFORNIA

Founded 1905 by E. M. C. WHITNEY and A. I. WHITNEY

A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

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High Standards of Architecture

Portland is distinctly to be congratulated upon the high standard of architecture, landscape architecture and sculpture shown to exist there by the recent selections of the architectural jury, published in this issue. And we are told that the jury could not premiate even then with the long list of honorable mentions given, all the buildings that are worthy of note in and about this splendid city. A number of the selections show as fine an art and as wise a handling of the problem as anything to be found in this country. Indeed, some of them are worthy of a Charles Platt. It is also interesting to note that the old Portland Hotel, designed thirty years ago by McKim, Mead & White, is still to be considered one of the first ten buildings of Portland.

As the city grows, newer, more useful and more beautiful buildings may be and probably will be put up, but we question whether this simple structure will not still be well up on the list ten or even twenty years from now.

With the exceedingly high standard of these Portland buildings before us, we wonder whether Oakland, Seattle or even Los Angeles can show ten examples of architecture that will measure up to them. This is not a challenge to the profession of these cities, but rather an invitation to study and have a better knowledge of what the fine things are that we have at home, so that the citizens of these cities may rightfully understand and acclaim the pride of their own, which they are entitled to.

If similar selections of the most notable buildings, gardens and sculptures of these cities are made, and we hope they will be, this magazine will be glad to publish them, as special numbers, in the interest of the profession, provided that a similarly competent jury of selection is chosen by their peers.

Greater respect and understanding of the architect and his profes-

sion can only result from thus calling public attention to the better works in any city and we congratulate Portland on having initiated this educational work.

City Planning in Portland

Portland has for many years taken a strong stand for carefully guided city growth. The recent establishment of a permanent city planning commission should have far-reaching effects and save untold cost, misery and unhappiness to the future citizens of the city. While there are about 350 cities of this country with such planning boards at work, we are told, it is a well-known fact that only those commissions which have competent, trained city planning advice have been able to make progress worthy of note. The war started a series of practical housing and city planning surveys in Portland which this city is now determined shall develop into a permanent planning department for the city.

While architects have understood for many years and strongly urged that practical city planning was worth a great deal to any community, it is only recently that the practical business man has grasped the situation and taken up the work with vigor. It is said that the aid the city planners gave the Government during the war has advanced practical understanding of the need for this work at least twenty-five years. City planning that is founded on a careful economic basis and with a true understanding of the social problems of living and working conditions can be sensibly carried ahead in any city. The aesthetic problems and the embellishment of the city should follow such study. The zoning and building regulations limiting height and use of buildings are essentially matters of economic import. But the order brought about in city growth by them is bound to result in enormous aesthetic improvement. And civic adornment can be expected as a natural sequel.

Cities so wonderfully situated as Portland, with its magnificence of scenic view and boulevard possibilities, are bound sooner or later to awaken to what they may do. It is the energy of men and their progressive co-operation which produces the greatest results. Given a good plan and these results are bound to be of enormous value.

Architects and Advertising

The following paragraph, culled from the Advertising World, is another sign of modern advancement. Is it too much to expect that one of these days we shall see several pages of The Architect and Engineer filled with the advertisements of our most distinguished architects?

I see the American Institute of Architects has removed the ban which debarred architects in the United States from advertising. The Institute will not, however, go so far as to advocate the practice.

In its official organ the Institute defines the reasons which have led to the change, paying therein a tribute to the wider part which advertising now plays in our everyday life in "the study of markets and the analysis of business in order to increase sales and open new markets." In fact, the Institute realizes that good advertising is not such a dreadful thing after all. Finally the Institute organ says:

"Advertising as a word thus began to stand for a variety of selling forces which could scarcely be enumerated. The architect, obliged in some manner to make his name known, could no more escape the utilization of some form of it than he could escape the use of the post for carrying his letters."

Below is a local example of architects' advertising—possibly a little more pretentious than the Institute had in mind when lifting the ban. It is taken from the advertising pages of the Fresno Democrat:

GLASS & BUTNER, Architects

We maintain the following departments in connection with all forms of building operations:

1. Architectural Designing.
2. Interior Designing and Decorating.
3. Structural Engineering.
4. Electrical and Heating Engineering.

Phone 3798 425-426-427 Cory Bldg., Fresno

The reader can judge for himself if it meets the standards of the profession. Expressions of opinion will be welcome.

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All communications should be addressed to Mr. Dessery, 511 Central building, Los Angeles.

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Address all communications of Geo. M. Nelson, 810 Bank of Italy building, San Francisco.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Santa Barbara Court House Competition

The programme for the competition for an architect for the proposed new court house at Santa Barbara has been completed and sent to the architects who have been invited to compete, a list of which was published in this magazine in February.

The date originally fixed for receiving the competitive drawings was April 14, but a later date will probably be set on account of delay in getting out the programme. Mr. J. Corbley Pool of Santa Barbara has been appointed to act as adviser in the conduct of the competition and in making the awards. The jury will consist of eight members and will include the five members of the Board of Supervisors, Mr. Sylvain Schnaittacher of San Francisco, Mr. J. E. Allison of Los Angeles, and an eighth member to be selected by the Board of Supervisors.

The site for the building is a square block, 456x456 feet. For the purpose of the competition the cost of the building shall be figured at an amount not to exceed $420,000, and the building is to contain not to exceed 1,100,000 cubic feet, thus making the cost a fraction less than 40 cents per cubic foot.

Twenty-nine architects have been invited to submit plans in the competition. The prizes to be awarded to the competitors are: First, commission to complete plans and supervise the erection of the building; second, $750; third, $500; and fourth, $250.

Things Doing in This Architect's Office

One of the busiest architects' offices in San Francisco is that of Mr. George W. Kelham, Sharon building. Besides making working drawings for the $500,000 Federal Reserve Bank, Mr. Kelham is designing the new office building for the Chevrolet Motor Car Company in Oakland, is preparing plans for a 12-story Class A office building to be erected in San Francisco, has two buildings for the Standard Oil Company in Richmond and a six-story Class A central quarters for the Salvation Army.

Oregon to Regulate Practice of Architecture

The bill before the Oregon Legislature for an act authorizing and regulating the practice of architecture has passed and awaits the Governor's signature.

The bill provides that persons other than architects may prepare plans and specifications and build in accordance therewith, but cannot call themselves architects or assume in any way the title "architect."

The architects of Oregon have proposed a like bill for the last three or four sessions of the Legislature, but have been unsuccessful until this session.

The bill was sponsored by a committee composed of Messrs. Geo. M. Post, chairman; E. F. Lawrence, D. L. Williams and Ion Lewis.

Oakland Arcadia Dancing Pavilion

Messrs. Cunningham & Politeo, architects in the First National Bank building, San Francisco, are preparing working drawings for a two-story Class A dancing pavilion to be erected on the site of the old Methodist Church at Fourteenth and Franklin streets, Oakland, for the Archon Company. Besides a large dancing floor, 110 feet in diameter, and a spacious entrance, the building will contain six stores, the latter all facing Franklin street. The building will cost $150,000.

$20,000 Apartment House

Mr. J. F. Dunn, architect in the Phelan building, San Francisco, is preparing plans for a $20,000 four-story frame apartment house to be erected on Pine street, west of Leavenworth, San Francisco, for Mr. A. H. Willson.

Brentwood School

Mr. James T. Narbett of Richmond has been commissioned to prepare plans for a $40,000 high school building at Brentwood. A bond issue of $60,000 was recently voted.

Troubles of An Architect

Many San Francisco architects will remember Mr. L. B. Dutton who retired some years ago, leaving as monuments to his architectural genius such familiar structures as the Merchants National Bank building and the Hotel Sutter, San Francisco (the latter, by the way, is to have three stories added to the existing eight floors), the First National Bank and First Trust buildings in Oakland and the First National Bank building, San Jose.

Mr. Dutton is now residing on his ranch three miles north of San Jose. He used to remark when practicing architecture that he occasionally "had his troubles." Recent reports from his ranch would indicate that one does not have to stick to architecture to experience perplexities. A while ago Mr. Dutton had the misfortune to fall off a step-ladder while pruning a tree and fracture an arm. Recently some more trouble came to him when his ranch was found to be infested with field mice, and the State Commissioner of Horticulture had to be called in to help drive out the pest. By actual count the infestation is said to have averaged 7500 burrows to the acre. The tract that was molested contains approximately 75 acres of two-year-old pears with alfalfa planted between the rows. To rid the ranch of the pests the entire field has been flooded, newly harrowed, smoothed down with a brush drag, and wherever there was evidence of a fresh burrow, crushed barley poisoned with strychnine was inserted. Mr. Dutton estimates his loss at $10,000.

Mr. Lansburgh Has Much Work

Working drawings are being made in the office of Mr. G. A. Lansburgh, architect in the Gunst building, San Francisco, for an eight-story reinforced concrete hotel of 200 rooms to be erected at Okmulgee, near Tulsa, Oklahoma, at an estimated cost of $400,000. Plans are also under way for a four-story Class A addition to the Elkan Gunst building, Powell and Geary streets, San Francisco, at a cost of $150,000. Contracts are about to be let in the same office for a new Orpheum Theatre in New Orleans.

To Teach Architecture

The drawing department of Manual Arts High School, Fresno, is preparing to offer special work in house construction and estimating in addition to the regular course in architectural drawing. This work is under the direction of Mr. Scott Quintin, architect, formerly of Berkeley.

Personal

Mr. Edward R. Bowen, formerly of the firm of Lippincott & Bowen, announces that he has returned to Los Angeles and has opened offices at 1103 Central building, and will specialize in the valuation of water works properties, the design of irrigation systems and structures and investigation of water supplies. Mr. Bowen is a member of the American Society of Civil Engineers.

Mr. Homer Hamlin, former city engineer of Los Angeles, will represent the U. S. Reclamation Service on a commission which will determine whether the Horseshoe dam site and reservoir on the Verde river shall be utilized by the Salt River Valley Water Users' Association or an association of homesteaders in Paradise Valley.

Dr. J. A. Waddell, of the firm of Waddell & Harrington, of Pasadena, which designed the splendid Colorado street concrete bridge at Pasadena, has been elected to membership in L'Institute de France in the Academie des Sciences, being the first American practicing engineer to be so honored.

Mr. Edward H. Bennett, who worked with Mr. Willis Polk on the Burnham plan and who made many friends while a resident of San Francisco some years ago, has designed an "Honor Roll Memorial" for the city of Chicago.

Mr. Paul Theine, landscape architect, has opened an office at 2 Staats Company building, Pasadena. He formerly maintained an office in the Marsh-Strong building, Los Angeles.

Mr. Herman Barth, architect, announces the removal of his office to the Phelan building, Room 401, San Francisco.

Messrs. J. A. Larralde and William Barber, architectural designers, have formed a partnership, with offices in the Story building, Los Angeles.

Mr. John B. Lyman, Jr., who designed the agricultural and mining buildings at the University of Arizona, has returned to Tucson, Arizona, and opened an office.

Messrs. Shea & Lofquist, architects, have moved their offices from the Bankers Investment building to the Chronicle building, San Francisco.

Mr. C. F. Skilling, architect, is now located at 754 South Figueroa street, Los Angeles.

Summer Resort Hotel

Plans have been completed by Mr. Perseo Righetti, architect in the Phelan building, San Francisco, for a two-story reinforced concrete hotel having thirty rooms for Mr. John B. Ghisolfo of Calistoga. The improvements will cost $25,000.

Appreciates California Architecture

The Architect and Engineer of California,
626-627 Foxcroft Building,
San Francisco, California.

Gentlemen:

During the writer's service in the army and at his request you have been mailing his copies of the Architect and Engineer to Mr. Wm. Stuhr of this city. I have received from Mr. Stuhr all past issues mailed to him up to and including the January, 1919, issue. In the future please mail all copies to me at my address, 431 Fourth street, Rock Island, Illinois.

I have been unable to locate an index for 1918-1919 either in the December, 1918, or the January, 1919, issues. I was under the impression that perhaps in separating the advertising section from the text that I accidently destroyed the index for the magazines for the past year. If either of these copies contained the index, please mail me an additional copy or the separate index if you can obtain one.

Please keep me posted as to when my subscription expires as I am desirous of keeping my files complete without interruption. Also mail me the statement for the above additional copy if same can be obtained.

Yours very truly,
EDWARD LERCH, Architect,

Rock Island, Illinois, Feb. 19, 1919.

Much Country Work

Building is showing a healthy increase in the country districts of the State, as indicated by new work in the office of Mr. William H. Weeks, 75 Post street, San Francisco. Mr. Weeks has completed plans for a Carnegie Library at Orland, a two-story store building at Santa Cruz for Mr. Samuel Leask, additions to a two-story store building at Red Bluff for the King Mercantile Company, alterations to the First National Bank of Palo Alto and the Bank of Palo Alto, a $10,000 residence at Woodland, two country houses near Hamilton City and a $30,000 school house at Hamilton City.

School Plans Being Made

Messrs. Allison & Allison, Hibernian building, Los Angeles, have been commissioned to prepare plans for a hollow tile school building at Watts, near Los Angeles, to cost $22,000. The same architects are also preparing plans for a $20,000 hollow tile school for the Little Lake School District in Antelope Valley, Los Angeles county.

Designing Many Bungalows

Miss Ida F. McCain, 318 Kearny street, San Francisco, architect for many of the new homes being built in Westwood Park, San Francisco, has recently completed drawings for a five-room bungalow for Mrs. A. Schlenker to cost $5,000; a one and one-half story bungalow on Miramar avenue and a $4,000 six-room cottage for Mr. Sylvain Cohen, all in Westwood Park.

Death of Arthur T. O'Brien

Mr. Arthur T. O'Brien, member of the architectural firm of O'Brien Bros., San Francisco, died suddenly March 5th at his home, 2218 Van Ness avenue, San Francisco. He had suffered from pneumonia, but was supposed to be on the road to recovery. Mr. O'Brien was associated in business with his brothers, Messrs. Walter J. and Albert O'Brien. He was 40 years old. He studied at Mark Hopkins Institute of Art and other schools and was a member of the Olympic Club, the Corinthian Yacht Club and the Indoor Yacht Club.

Messrs. Reed & Corlett Busy

Messrs. Reed & Corlett, architects in the Oakland Bank of Savings building, Oakland, have completed plans and are taking bids for extensions to the Howard Company's wharf in Oakland. They have also completed drawings for the second unit of the municipal band stand in Lakeside Park. Plans are being made for two attractive country homes, one near St. Helena for Mr. S. Salmina and the other in Willows, Glenn county, for Mr. Howard Payne.

Have Been Doing Their Bit

Mr. John Parkinson, architect of Los Angeles, is particularly proud of the service flag which adorns his office. Numbered among the men from his employ who joined the colors are one major, two captains, one first lieutenant, one sergeant and two privates. Mr. Parkinson's son was an aviation cadet and completed his training at March Field, making several hundred flights.

Big Los Angeles Hotel

Mr. Harrison Albright, architect in the Laughlin building, Los Angeles, has prepared preliminary plans for a 14-story Class A hotel to be built on the southwest corner of West Sixth street and Commonwealth avenue, Los Angeles, and to contain 500 rooms. The building is for the Lafayette Hotel Company. The estimated cost is $2,000,000.

Designing County Jail

Mr. Edward Perry, architect of Vallejo, who recently completed plans for a county hospital group at Fairfield, is preparing plans for a branch county jail which will be built at Marin and Capitol streets, Vallejo.

Open San Francisco Offices

Messrs. Glass & Butner, whose main offices are in the Cory building, Fresno, have opened San Francisco offices in the Mills building.

This Architect Is Opposed to State Registration

The following communication was printed in a recent number of the Cape Town Architect, Builder and Engineer:

Sir: I see that you are again supporting the proposed bill for the registration of architects and that a conference will be held in this connection early next month.

Take this illuminating paragraph from your leading article:

> Registration is more a matter of public than mere professional interest. The spending power of the building public has, in the past, been wasted by incompetent and unscrupulous self-styled architects who were not under either public or professional control.

In what way registration is ever going to avoid this I fail to see. Architecture is defined as the art of building beautifully, including, of course, conveniently. It is allied to painting and sculpture. In what way are we to examine upon matters of taste? Would one even suggest the registration of painters to avoid bad pictures? What do we mean by bad buildings? If it is a matter of calculating the thickness of a reinforced concrete floor or the size of a rafter, an engineer can solve these problems. If it is more the indefinable question of the beautiful, in what way do you propose to examine for this? When you write about money being wasted, do you mean in bad construction? If so, we need more competent building inspectors. If you mean ugly and badly planned buildings, would not the architects who designed them be just the men to whom the false hallmark of registration would be given? Registration would be misleading to the public. It would profess to test the standard of the beautiful and this is impossible. The public has no excuse. It can soon find out the good architect. It gets the architect it deserves. The architect who sticks to his work and gets any chance at all soon shows the stuff that is in him. Your space is limited, but allow me to add one point. To make architecture a closed profession whilst there is no system of architectural education in this country would be wrong. If registration is to come, systematic training must come with it. It is true that an architect must have a born gift, but this does not mean that his natural ability cannot be developed by training. For good taste we need the influence of the master mind.

Is not all this talk about registration mere professionalism? The greatest critic of the taste of a particular architect is a brother architect. Registration will lead to mainly, stereotyped mediocrity. Do not let us look upon it as an universal panacea.

"CUNEUS."

Johannesburg, 1919.

Keeps Him Posted on "What's Doing."

Editor The Architect and Engineer of California:

Enclosed is check for $1.50 for which please enter my subscription to your publication for the present year. The November, 1917, number is the latest I have, so I do not know if your subscription rate has advanced or not, but will forward the difference if any.

Have just been released from the service and am re-opening my office at the above address. Would be glad to receive trade literature and advertising matter.

My experience in the service was very interesting and profitable on the whole. About the first of last July I was commissioned second lieutenant in the Quartermaster Corps from the O. T. C. at Camp Johnston, Florida. I was sent to New York and stationed on the Canadian Pacific liner "Empress of Asia." Made three voyages to Liverpool, England, as conducting officer transporting troops. Was relieved at Liverpool December 1st, returning to the States on the "Baltic," where I was again assigned to the "Megantic," making one more round trip voyage. While in England my duties being practically nil, I was enabled to spend considerable time seeing the sights. Called at the offices of several architects in Liverpool. Was interested to observe the striking similarity of their office methods, "lingo," etc., with our own. I visited in particular a very fine community housing proposition at Port Sunlight in Cheshire, housing the employees of the Sunlight Soap Factory. The design and substantial construction of the houses equaled and surpassed any similar project I have seen in this country.

Impatiently awaiting your first number as my first opportunity to get in touch with things doing at the present time, I remain,

Very sincerely yours,

JAS. C. SIMMS,
San Luis Obispo, Calif.

California Federal Buildings

California will receive over $2,000,000 in appropriations for the purpose of erecting federal buildings providing the congressional bill passes without amendments.

The largest single appropriation for this State is that of $1,000,000 for the erection of a postoffice building and the purchase of a new site in Oakland.

The next largest amount is $800,000, and is wanted for the purpose of erecting a building to be used for the United States Marine Hospital in San Francisco.

Following is a complete list of the California appropriations mentioned in the bill:

Completion of Buildings	
Bakersfield	$35,000
Red Bluff	20,000
San Luis Obispo	42,000
San Pedro	80,000
Addition to Buildings	
Sacramento	$60,000
Erection of Buildings	
Long Beach	$200,000
Modesto	90,000
San Bernardino	100,000
United States Marine Hospital (San Francisco)	800,000
Site Purchase and Erection	
Marysville	$ 100,000
Oakland	1,000,000
Petaluma	90,000
Purchase of Site	
Palo Alto	$15,000
Alturas	10,000

Placerville	10,000
San Mateo	15,000
Santa Monica	15,000
Susanville	10,000
Venice	10,000

Mr. Coxhead Honored

Mr. Ernest Coxhead, architect of San Francisco, is receiving distinguished recognition in France, as evidenced by the following formal appointment of Mr. Coxhead to the Department of Fine Arts:

ARMY EDUCATIONAL COMMISSION,
Y. M. C. A.
February 14, 1919.

From: George S. Hellman, Director, Department of Fine Arts.

To: John Erskine, Chairman, A. E. C.

Subject: Assignment of Ernest Coxhead to the Department of Fine Arts.

Mr. Coxhead, who on his own initiative organized the successful little A. E. F. School of Architecture at Le Mans, is desired by me for the Art Faculty at Beaune, and is willing to take up his duties there on or after the 1st of March, 1919. I, therefore, would request you to have him report to me on March 1st for the work at Beaune. Mr. Coxhead is one of the most important men in the Y. M. C. A. in connection with the Art School at Beaune. As he is already assigned to the A. E. C., I understand that you have full authority to call him back from Le Mans for the work at Beaune.

GEORGE S. HELLMAN.

Draftsmen Form Union

The San Francisco draftsmen have organized a branch of the International Federation of Draughtsmen's Unions, to be known as San Francisco Local No. 11. The new wage schedule is as follows:

Senior draughtsman, $10 a day. A "senior" draughtsman must be able to handle and direct work of a shop, figure costs and be responsible for his work.

Draughtsmen, $8 a day. Must be competent to work under direction of a foreman or senior draughtsman.

Apprentices, $4 a day.

No deduction can be made for holidays. If a draughtsman has been employed steadily by one concern for six months, no deduction can be made for illness.

Manufacturers and architects using draughtsmen say that the schedule will entail a considerable raise in wages.

Bank Alterations

Mr. C. E. Gottschalk, architect in the Phelan building, San Francisco, is preparing plans for extensive improvements to the Mutual Savings bank building at Geary and Market streets, San Francisco. The bank will take in an adjoining store, which will give it the entire ground floor and basement. There will be new fixtures and counters and considerable marble and bronze work. An elevator will be installed to facilitate reaching the basement, where vaults will be built.

Mr. Gottschalk has also made plans for the granite pedestal and base for a bronze statue of Robert Emmett, to be erected in Golden Gate Park by Senator James D. Phelan.

Fresno Architects Busy

Revival of construction work in Fresno is indicated in reports from local architects. A gymnasium to cost $30,000 or $40,000 will be added to the Madera high school from plans by Messrs. Swartz & Swartz.

Work has been started on a $150,000 National Bank building at Cutler from plans by Messrs. Glass & Butner. The fixtures of the bank will be of oak and marble with bronze screen and the floor will be of tile. The outside of the building will be of water-proof colored stucco with two-color terra cotta trimmings.

Mr. Ernest J. Kump, architect, has resumed his practice in the Rowell building and is completing plans for a $40,000 high school building at Tranquality. Mr. Kump is making plans for an administration building for the Alta Irrigation District at Dinuba and to cost $12,000. The structure will have a pressed brick front and tile roof.

Mr. Eugene Mathewson, architect in the Cory building, Fresno, is preparing plans for a hotel, store building, theatre and bank to be erected at San Joaquin City, near Fresno, for the San Joaquin Lands Company. Mr. Mathewson is also preparing plans for a two-story addition to the First National Bank building, Fresno.

Los Angeles Residence Work

Mr. S. M. Cooper, architect, 803 Story building, Los Angeles, has prepared plans for a $12,000 residence to be built on Western avenue for Mr. W. E. Warren.

Mr. Cooper also has made plans for a $10,000 nine-room home for himself to be built on South Serano avenue.

Mr. Percy Eison, architect in the Wilcox building, has let contracts for the construction of a two-story residence on Vine street, Los Angeles, for Mr. F. O. Andrews.

Warehouse and Factory Construction

Mr. Phillip Bush, construction engineer for the California Packing Company, 101 California street, San Francisco, is preparing plans for a reinforced concrete warehouse and a number of employees' cottages to be built at the company's San Leandro plant. Mr. Bush's staff has also made drawings for new buildings which the California company intends to erect in Fresno, Hanford and Santa Rosa.

Clay Street Apartments

Mr. Walter O. Falch, architect in the Hearst building, San Francisco, has completed plans for a five-story, Class C, reinforced concrete apartment house to be erected on Clay street, near Van Ness avenue, at an estimated cost of $50,000. It will have 30 feet frontage. All modern conveniences will be provided.

Chevrolet Office Building

The architectural plans for the two-story office building which the Chevrolet Company will build at its East Oakland plant, are being prepared by Mr. George W. Kelham, Sharon building, San Francisco. The engineering plans have been drawn by Mr. H. J. Brunnier, Sharon building. The building is to be of reinforced concrete with brick facing and will be constructed by the P. J. Walker Company.

Opens San Francisco Office

Mr. Walter King, formerly of Stockton, has opened an office at 312 Call-Post building, San Francisco. Mr. King has taken bids for the construction of an eight-room residence for Mr. F. M. Buttrich of the Commercial Bank, Stockton, and he is preparing plans for an apartment house.

Capitol Extension Buildings

Construction of the two units of the Capitol extension in Sacramento will begin in five months, regardless of the cost of labor or materials. The State will spend $3,000,000 on the improvements. Messrs. Weeks & Day, the architects, say they will have the plans completed by early summer.

Berkeley Garage

Mr. James W. Plachek, architect, with offices at 2014 Shattuck avenue, Berkeley, has completed plans and has awarded contracts for the construction of a one-story class C brick garage, 50x134, for Messrs. H. C. MacCauley and John Lauffer. The building will be built on Center street, west of Shattuck avenue, Berkeley.

Designs Many Homes

Mr. Charles E. J. Rogers, architect in the Phelan building, San Francisco, reports much building activity in San Mateo county. Mr. Rogers has three bungalows under construction and has completed plans for as many more. He also has made drawings for altering a large residence into modern apartments.

Los Angeles School Building

Mr. L. L. Jones, 621 Investment building, Los Angeles, is preparing plans for a three-story private school building, 45x85, for a religious organization of which Mr. A. K. White, 1185 East Jefferson street, is secretary.

Bank Changes

The Humboldt Bank of San Francisco is planning a number of changes to its banking rooms and plans for the work are being prepared by Mr. Smith O'Brien, architect.

Result of Gladding, McBean Competition

Following is the result of a competition for a factory office building for Gladding, McBean & Co. at Lincoln, Cal.:

First prize of $150 awarded to Mr. Ernest E. Weihe, with Bakewell & Brown, 251 Kearny street, San Francisco.

Second prize of $100 awarded to Mr. H. C. White, Crocker building, San Francisco.

Third prize of $50 awarded to J. E. Stanton, Crocker building, San Francisco.

Special mention on account of imaginative quality and presentation was given to Mr. Charles F. Dean, Forum building, Sacramento.

Special mention on account of presentation was given to Mr. Stafford Lelean Jory, 1420 Scenic avenue, Berkeley.

Other mentions: Messrs. T. Bearwald, Ferry building, San Francisco; A. R. Widdowson, 607 Forum building, Sacramento; Wm. R. Schmitt, 1017 Hibernian building, Los Angeles; and David Olson, 125 Grand avenue, Oakland.

The jury was composed of Messrs. Arthur Brown, Jr., Wm. C. Hays, Warren C. Perry and I. W. Jeanes.

Architect Selected for Firehouse

Mr. J. R. Miller, Lick building, San Francisco, has been commissioned to prepare plans for a two-story firehouse at Redwood City. Construction will be either brick and mill type or reinforced concrete. Other architects who competed in the informal competition included Messrs. W. H. Toepke and Chas. E. Hodges.

Capt. Norberg Returns

Captain Ernest L. Norberg, San Francisco architect, has returned from France, after seven months at the front with the 316th Engineers, of the Ninety-first Division. He was in command of one of the companies of engineers sent into the first line trenches to take the place of infantry.

Portland Architect Returns

Capt. C. A. Houghtaling, of Houghtaling & Dougan, architects, who secured a commission in the engineering branch of the army, has returned from the eastern training camp to which he was assigned. Although upon the signing of the armistice permission to resign was offered, he remained through the entire training period.

Club Buildings

Miss Julia Morgan, architect in the Merchants Exchange building, San Francisco, has completed plans for a one-story club building with swimming pool for the Girls' Recreation Center, Y. W. C. A., Vallejo. Cost, $20,000. Miss Morgan is completing drawings for a Y. W. C. A. building in Berkeley.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Text of Pending Bill to License Engineers

BELOW is the text of a bill introduced in the California General Assembly at its preliminary session providing for the registration of professional engineers.

At a recent meeting of San Francisco Chapter, A. I. A., President Sylvain Schnaittacher appointed a committee consisting of Messrs. John J. Donovan, chairman; W. B. Faville, John Reid Jr., and J. W. Dolliver to suggest such amendments to the State Legislature as may be developed by a careful study of the measure. Engineers, as a whole, are favorable to the bill as it stands.

Section 1. Definitions. As used in this act:

1. The "board" means the state board of engineering examiners provided for by this act.

2. A person practices professional engineering within the meaning of this act who practices any branch of the profession of engineering other than military engineering. The practice of professional engineering involves the control of forces of nature and the utilization of materials and these forces for the benefit of man. A certificate to practice professional engineering, as hereinafter provided, will permit the holder thereof to offer his services in consultation, in investigations and for research work and to design and supervise the construction of public and private utilities or works such as railroads, bridges, buildings, highways, roads, canals, tunnels, harbors, river improvements, lighthouses, wet docks, dry docks, ships, barges, dredges, cranes, floating docks and other floating property, to design and supervise the construction of steam engines, turbines, internal combustion engines, and other mechanical structures, electrical machinery and development, transmission or application of power, power plants, the distribution of steam, water, gas and other elements, heating and ventilating, to examine mining properties, to supervise mining and metallurgical operations, and all related operations including those pertaining to the oil industry and to supervise the design and erection of structures and works necessary to such operations, and to design and supervise the construction of municipal works, irrigation works, water supply works, sewerage works, drainage works, industrial works, sanitary works, hydraulic works, hydro-electric works, chemical works, valuations and appraisements, and structural works and other public or private utilities or works which require for their design or the supervision of their construction such experience and technical knowledge as are required in Section 7 of this act for admission to examination. The enumeration of any public or private utilities or works in this section shall not be construed as excluding any other public or private utilities or works which require such experience and technical knowledge for their design or the supervision of their construction. The execution as a contractor of work designed by a professional engineer or the supervision of the construction of such work as a foreman or superintendent for such a contractor shall not be deemed to be the practice of professional engineering within the meaning of this act.

3. "Professional engineer" means any person who practices professional engineering.

Sec. 2. Qualifications. After July 1st, 1920, no person shall practice professional engineering without having first been duly and regularly registered by the board as a professional engineer as required by this act nor shall any person practice professional engineering whose authority to practice is revoked by the board; and after July 1st, 1920, no diploma or certificate conferred on or granted to a person other than a certificate issued under this act by the board or its secretary shall be lawful authority for the practice of professional engineering.

Sec. 3. The State Board of Engineering Examiners. There shall be a state board of engineering examiners consisting of nine members to be appointed by the governor. Of the members of the board first appointed hereinunder three shall hold office until July 1st, 1921, three shall hold office until July 1st, 1923, and three shall hold office until July 1st, 1925; and the term of office of each member so appointed shall begin on July 1st, 1919. Upon the expiration of each of such terms the term of office of each member thereafter appointed shall be six years from July 1st. The governor may remove any member of the board for misconduct, incapacity or neglect of duty. Vacancies in the board caused by death, resignations or removal from office shall be filled by appointment by the governor for the unexpired term. Each member of the board shall be a professional engineer of at least ten years active experience and of recognized good standing in his profession, shall be at least thirty-five years of age and shall have been a resident of this State for at least one year immediately preceding his appointment. Each member of said board, except the members first appointed hereunder, shall also be a registered professional engineer. The members of the board shall serve without compensation except traveling and other necessary expenses.

Sec. 4. Certificate of Appointment; Oath; Powers. Every member of the board shall receive a certificate of his appointment from the governor and before beginning his term of office shall file with the secretary of state the constitutional oath of office. Each member of the board first appointed hereunder shall receive a certificate of registration under this act from said board. The board or any committee thereof shall be entitled to the counsel, advice and services of the attorney general; shall have power to compel the attendance of witnesses, and may take testimony and proofs concerning all matters within its jurisdiction. The board shall have an official seal to be furnished and provided by the secretary of state. The board may make all by-laws and rules not inconsistent with law needed in performing its duties; but no by-law or rule by which more than a majority vote is required for any specified action by the board shall be amended, suspended or repealed by a smaller vote than that required for action thereunder.

Sec. 5. Officers; Meetings; Quorum. The board shall biennially elect from its members a president and a vice-president for the ensuing biennial term. The board shall appoint a secretary, who shall not be a member of the board, but who shall possess the qualifications required by this act for members thereof. The secretary shall hold office dur-

ing the pleasure of the board and shall receive such compensation as the board may decide. He shall give a bond in such amount and with such sureties as may be approved by the state comptroller conditioned for the faithful performance of his duties and for the accounting for, and payment over of, all moneys received by him. The secretary shall keep on file in the office of the board a record of all certificates of registration issued, and he shall receive and account for all fees derived from the operation of this act. He shall also perform such other duties as may from time to time be assigned to him by the board.

The board shall hold at least six stated meetings in each year. Special meetings may be called in such manner as the by-laws of the board may provide. Notice of all meetings shall be given in such manner as the by-laws of the board may provide. At any meeting of the board held solely for the examination of candidates for registration three members shall constitute a quorum; but if three or more members shall not attend at the time and place fixed for such meeting, the member or members present may adjourn the meeting from time to time until a quorum be present. At all other meetings a majority of the board shall constitute a quorum.

Sec. 6. Payment of Salaries and Expenses; Report. The fees derived from the operation of this act shall be paid into the State Treasury, to be known as Professional Engineers' Fund. The fund is to be kept as a special fund and any unexpended balance is to be carried over from year to year and continued as such special fund. Warrants for the payment of salaries and expenses incurred shall be issued by the State Comptroller and paid by the State Treasurer only out of the Professional Engineers' Fund upon presentation of voucher regularly drawn and approved by the President and Secretary of the Board.

On or before the first day of February of each year beginning in the year 1920 the board shall submit to the legislature a written report of its proceedings for the preceding year and shall file with the secretary of state a copy of said report together with a complete statement of the receipts and expenditures of the board for the preceding year, verified by the oath of the secretary, and a complete list of all persons registered to practice professional engineering under this act with their addresses and the dates of their certificates of registration.

Sec. 7. Admissions to Examinations. The board shall admit to examination any candidate who pays a fee of five dollars and submits evidence, verified by oath and satisfactory to the board, that he

(1) is more than twenty-one years of age,

(2) is of good character, and

(3) has been engaged upon engineering work for at least six years and during that period has had charge of engineering work, as principal or assistant, for at least one year.

(4) or, in lieu of the third requirement specified above, is a graduate from an engineering school of recognized good reputation and has been engaged upon engineering work for at least four years and during that period has had charge of engineering work, as principal or assistant, for at least one year.

Sec. 8. Examination. Examinations for registration shall be held at stated or special meetings of the board at such times and at such places within this State in each year as the board shall determine. The scope of the examinations and the methods of procedure shall be prescribed by the board. The examinations may be either oral or written or partly oral and partly written. As soon as practicable after the close of each examination the members of the board who shall have conducted such examination shall make and sign and file in the office of the board a certificate stating the action of the board upon the application of each candidate, whereupon the secretary of the board shall notify each candidate of the result of his examination.

Sec. 9. Certificates of Registration. Upon receipt of an additional fee of $20 the board shall issue to any applicant who has been certified as having passed the examination conducted by the board a certificate of registration signed by the president and the secretary of the board under the seal of the board, whereupon such applicant shall be authorized to practice professional engineering as defined by this act.

The board shall from time to time examine the requirements for the registration of professional engineers in other states, territories and countries and shall record those in which, in the judgment of the board, standards not lower than those provided by this act are maintained. The secretary of the board, upon the presentation to him by any person of satisfactory evidence that such person holds a certificate of registration issued to such person by proper authority in any such state, territory or country so recorded and upon receipt by him of a fee of $25, shall issue to such person a certificate of registration under this act signed by the secretary under the seal of the board, whereupon the person to whom such certificate is issued shall be entitled to all the rights and privileges conferred by a certificate issued after examination by the board.

Sec. 10. Registration Without Examination. The board shall at any time on or before July 1st, 1920, issue a certificate of registration signed by the president and the secretary of the board under the seal of the board upon due application therefor and the payment of a fee of $25, to any candidate who shall submit evidence, verified by oath and satisfactory to the board, that he is of good character and has practiced professional engineering for at least ten years preceding the date of his application and during that period has had charge of engineering work as principal or

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COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
- QUARTERED OAK -
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-ORCASSAN WALNUT
LUMBER--TIMBER
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assistant for at least two years. After July 1st, 1920, the board shall issue certificates of registration only upon examination as hereinbefore provided.

Sec. 11. Registry; Revocation and Reissue of Certificates of Registration. All certificates of registration issued by the board or its secretary shall be in such form as the by-laws of the board may prescribe. Before any certificate of registration is issued by the board or its secretary, it shall be numbered and recorded in a book kept for that purpose in the office of the board and the number of the certificate shall be noted on the certificate. Such record shall be open to public inspection and in all actions or proceedings in any court such record or a transcript of any part thereof certified by the secretary of the board under the seal of the board to be a true copy shall be entitled to admission in evidence.

The board shall have power at any time to inquire into the identity of any person claiming to be a registered professional engineer and after due service of a notice in writing, require him to prove to the satisfaction of the board, that he is the person authorized to practice professional engineering under the certificate of registration by virtue of which he claims the privilege of this act. When the board finds that a person claiming to be a professional engineer registered under this act is not in fact the person to whom the certificate of registration was issued, it shall reduce its findings to writing and file them in its office. Such findings shall be prima facie evidence that the person mentioned therein is falsely impersonating a professional engineer of a like or different name.

The board may revoke a certificate of registration of a professional engineer for fraud or deceit in his practice or in the securing of his certificate or for the conviction of crime. Proceedings for the revocation of a certificate of registration shall be begun by filing with the board a written charge or charges against the accused. These charges may be preferred by any person or corporation or the board may on its own motion direct its secretary to prefer such charges. When charges are preferred against a professional engineer registered under the provisions of this act, the board shall designate not less than three of its number as a committee to hear and determine said charges. A time and place for the hearing shall be fixed by said committee and a copy of the charges together with a notice of the time and place for the hearing shall be served upon the accused or his counsel at least ten days before the date fixed for said hearing. Where personal service or service upon counsel cannot be effected and such fact is certified on oath by any person duly authorized to make legal service, the board shall cause to be published for at least seven times, the first publication to be at least thirty days prior to the hearing, in two newspapers published in the section of the State in which the accused was last known to practice, a notice to the effect that at a definite time and place a hearing will be had on the charges against the accused upon an application to revoke his certificate. At said hearing the accused shall have the right to cross-examine witnesses against him and to produce witnesses in his defense and to appear personally or by counsel. The said committee shall make a written report of its findings and recommendations and shall forthwith submit the same to the board. If the board shall find that said professional engineer has been guilty of any fraud or deceit in his practice or has been guilty of any fraud or deceit by which he was admitted to practice or has been convicted of crime, it shall revoke his certificate of registration. A two-thirds vote of all the members of the board shall be necessary for this action. The action of the board shall be recorded in the same manner as certificates of registration are recorded and the name of the person whose certificate of registration is so revoked shall be stricken from the list of registered professional engineers and he shall be disqualified from practicing as professional engineer.

The board may re-issue a certificate of registration to any person whose certificate has been revoked, but only after the expiration of one year from the date of such revocation, for reasons which the board shall by a two-thirds vote of all its members determine to be satisfactory.

Sec. 12. Action of the Board. The members of the board or of any committee thereof and the secretary of the board in granting, witholding, revoking or re-issuing a certificate of registration shall be deemed to be acting officers of the State and it shall be the duty of the attorney general to represent and appear for them or any of them in any action or proceeding brought against them or any of them because of any such act.

Sec. 13. Certificate Presumptive Evidence. Every unrevoked certificate and endorsement of registry made as provided in this act shall be presumptive evidence in all courts and places that the person named therein is legally registered.

Sec. 14. Penalties. Any person who not being then legally authorized to practice professional engineering within this State according to the provisions of this act and so registered according to law shall practice, or attempt or advertise to practice, or hold himself out as authorized to practice professional engineering or shall use in connection with his name or otherwise assume, use or advertise any title or designation tending to convey the impression that he is a professional engineer, and any person who shall buy, sell or fraudulently obtain any certificate of registration or who shall aid or abet such buying, selling or fraudulently obtaining or who shall practice or attempt or advertise to practice or hold himself out as authorized to practice professional engineering under cover of any

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certificate obtained or issued fraudulently or unlawfully or under fraudulent representations or mistake of fact in a material regard and any person who shall practice, or attempt or advertise to practice, or hold himself out as authorized to practice professional engineering under a false or assumed name or who shall falsely impersonate any professional engineer or former professional engineer of a like or different name shall be guilty of a misdemeanor.

Sec. 15. Application of Act. This act shall not apply to any professional engineer working for the United States government; nor to any professional engineer employed as an assistant to a professional engineer registered under this act; nor to architects when authorized by law to do any of the things enumerated in paragraph 2 of Section 1 of this act; nor to persons holding the offices of County Surveyor, City Engineer or State Engineer; nor to any professional engineer coming from without this State and employed therein until a sufficient time, as prescribed by the rules of the board, shall have elapsed to permit the registration of such person under this act, provided that before practicing within this State he shall have applied for the issuance to him of a certificate of registration and shall have paid the fee prescribed in this act for admission to examination.

Sec. 16. Appropriation. There shall be appropriated for the use of the board for the payment of salaries and expenses under this act from moneys not otherwise appropriated the sum of five thousand dollars. This sum of five thousand dollars is to be returned to the State Treasury from the Professional Engineers' Fund on December 31st, 1920.

Sec. 17. Time of Taking Effect. This act shall take effect on the first day of July, 1919.

Oregon Society of Engineers

The annual meeting of the Oregon Society of Engineers was held at the University Club, Portland, Monday evening, February 3. A dinner was served to forty-two members present.

The result of the election of officers was announced as follows: President, Mr. J. W. Cunningham; vice-president, Mr. O. Laurgaard; secretary, Mr. O. E. Stanley; treasurer, Mr. H. M. Morse; directors, Messrs. P. H. Dater, O. A. Kratz and Herbert Nunn.

The society went on record in favor of a measure now before the Legislature which provides for abolishing offices of county surveyor and road master and creating the office of county engineer, the latter to be an appointive office.

The bill before the Legislature, which provides for the licensing of professional engineers and creating a State Board of Examiners to pass upon applications of those seeking such license, was brought up. The discussion developed a marked division of opinion.

Seattle Engineers' Club

The war being a thing of the past and the engineers steadily taking their places again in the life of the community, the Engineers' Club of Seattle is beginning to function regularly again. Good talks and discussions by prominent men, both engineers and those of other professions, are once more becoming a feature of the Thursday luncheons at the club rooms in the Arctic building. At the luncheon on January 30 Mr. S. L. Boothroyd, professor of astronomy at the University of Washington, addressed the club on the subject, "The Lick Observatory Expedition." He was a member of the expedition and discussed the gathering of engineers and astronomers to witness the recent total eclipse. On February 20 Mr. W. J. Santmyer of the Puget Sound Traction, Light and Power Company addressed the club on the subject of "Powdered Coal as a Fuel." This was the first of a series of talks on industrial engineering subjects.

American Society

At a recent meeting of the Seattle Association of Members, American Society of Civil Engineers, the following officers were elected: L. M. Grant, president; John L. Hall, vice-president; Phil A. Franklin, secretary and treasurer. At this meeting R. H. Thomson, prominent engineer and city councilman, addressed the society on the co-ordination of freight terminals at Puget Sound.

Subway Engineers Reinstated

The 339 engineers of the Public Service Commission of New York City who were summarily discharged on December 30 because the Board of Estimate in its budget had made no provision for their future salaries, have been reinstated. On January 31 the Board of Estimate reversed its action and allowed an appropriation sufficient to maintain these engineers for February and March, the remaining two months of the current quarter.

Licensing Engineers

At its annual convention the Ohio Engineering Society voted unanimously in favor of licensing engineers. It is expected that a bill for this purpose will be presented at the present session of the Ohio Legislature.

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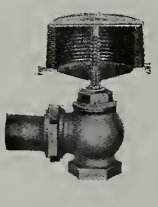

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Art, Artfulness and the Owner

By J. P. ANNAN*

THE relations of this three-cornered association between the architect, his client and the contractor, as a general rule forms the basis for a prolonged struggle between art, artfulness and the owner, with the innocent bystander looking on and gaining nothing by the experience of the three engaged in the heroic endeavor to build a real house and everyone get a square deal.

One of the prime causes of such a highly unsatisfactory state of affairs is the fact that neither one of the three directly interested seems to have a working knowledge of just the requirements of either of the other two, and in the place of a feeling of confidence and trust we find an atmosphere of distrust and surreptitious watching that can never accomplish good results in any endeavor.

For some mysterious reason the average owner starts out with the unfounded conviction that all contractors and artisans in every trade are, either by birth or carefully studied practice, proficient crooks, who are constantly trying to put over something dishonest and something less than the owner is entitled to receive. My own experience, covering a continuous practice of thirty-three years, has convinced me that builders of the better class and each of the artisans working with him are the same kind of human being as the rest of the world, with the same high ideals of Christian and commercial responsibility, and with the same strong desire to serve faithfully, first their own high ideals and standards, and next to give always a little more than demanded, and in many cases much more, than a cold interpretation of a contract would warrant.

The contractor starts out with a very unfair handicap, as he usually binds himself "to do and to complete" a certain piece of work based upon data furnished by the architect, which in so many instances includes a phrase which has proved the shameful refuge of incompetent architects; this phrase asks the contractor to do work which might be "implied," whether shown or not and whether described or not. Another refuge of the "half-baked" architect makes the architect the sole arbiter, without recourse, and his decisions are final and binding, regardless of the injustice which might be, and usually is, done the contractor.

Of the guiltiest of the three in the arrangement, I am frank to acknowledge that I think the architect and the owner are more subject to criticism, as this pair generally commence operations and lay the foundations for future misunderstandings long before the contractor appears on the scene, and the package of incomplete and ambiguous data accompanied by ignorant statements of probable cost is all carefully wrapped up before the contractor has entered the struggle.

Let's see where Mr. Owner comes in on this indictment.

* Extracts of an address before the Material men and Contractors of Shreveport, Louisiana.

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Does he select his architect because he knows him to be a thoroughly trained, highly ethical and truly efficient man who by long years of honorable practice is entitled to the same deep respect and unbounded confidence he gives to his attorney or his physician? Does he leave to his architect the solving of all of the practical and esthetic problems that confront him, and trust implicitly in his architect's integrity, knowledge and culture?

Mr. Owner certainly does not do any such thing. He usually selects his architect based solely on the fact that his sign says he's an architect, or more frequently he selects him because he either went to school with him or belongs to the same lodge, or the architect is the forty-second cousin of the owner's wife's grandmother, or maybe the architect goes to the same church or plays golf with the owner.

Here's where much of the trouble begins, and after selecting his incompetent architect, Mr. Architect proceeds to prepare his faulty and incomplete data, usually misleading the owner in statements as to cost, not through deliberate cussedness, but as an offering of dense ignorance and inexperience. A thoroughly proficient architect should be able to make a detailed and itemized estimate of cost, knowing the unit cost of every branch of material and labor, and should be able to do this without asking estimates from anyone in the building trades. Mere horse sense should suggest to an architect that if a certain "bunglehouse" cost Mrs. Jones a certain sum (probably 30 per cent more than he told her) that when Mrs. Smith wants the same junk piled up for 50 per cent less than it cost Mrs. Jones that it simply can't be done. But poor Mr. Architect in his frenzied chase of the fateful meal ticket, promises anything at any price, and trusts in the hope that maybe some poor contractor in bidding on the work will make some terrible error and agree to build $8,000 worth of house for $5,000.—Improvement Bulletin.

Proposal to License Building Contractors

THE proposal to license building contractors and the form of a bill in that connection brought up for consideration at the recent convention of the Wisconsin Master Builders' Association, was not discussed owing to lack of time, but was deferred to the next convention of the association. It is here reprinted as published in the Builders' Bulletin, and possibly California contractors will find it worth while to enact some similar measure here, to protect the legitimate members of the industry from the growing surplus of incompetents:

During several of our annual conventions, also at meetings of various local associations, the question of licensing building contractors has agitated the minds of the members.

Many contractors are firm in their belief that a State law should be enacted requiring the examination by a State board of all persons who wish to engage in business as a building contractor, and that those passing such examination shall be given a certificate granting permission to begin such business. Other contractors, however, hold opposite views, believing that nothing can be gained by such course.

In order to bring this matter to a thorough discussion by the members of the Master Builders' Association of Wisconsin, our Legislative Committee has drawn up a tentative "bill," which has been approved by a competent attorney, and which, if approved or amended by the convention, will be introduced in proper manner through our committee at the present session of the Wisconsin legislature. The text of the proposed measure is given in the following, and members are requested to familiarize themselves with its provisions and to come prepared to discuss the same at the convention. The bill is as follows:

Proposed "Bill" to License Building Contractors

There is hereby created a board of three (3) examiners to be known as the Board of Examiners of Contractors. Such board shall consist of the State architect, the State engineer and the chief building inspector of the Industrial Commission. Such examiners shall be entitled to no compensation for their services, except traveling and other necessary expenses. Such board shall prescribe reasonable rules and regulations for the examination and registration of candidates for certificates under the provisions of this section.

Qualifications

Any person being at least twenty-one (21) years of age and of good moral character, may apply for examination under this section, but

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before taking such examination he shall submit satisfactory evidence of having acquired a thorough knowledge of the building trade.

Examinations

Examinations shall be held by the board at least once in each year, at such time and places as may be determined by them. The time and place of holding examinations shall be advertised for not less than three consecutive days, nor less than thirty (30) days prior to the date of such examination, in at least one daily newspaper printed and published in the city of Milwaukee, and in at least one daily newspaper printed and published in the city of Madison. Each applicant shall also be notified by mail by the secretary of the board, at the address mentioned in the application when and where such examination shall be held. Such notice shall be mailed not less than thirty (30) days prior to the date of the next examination.

Certificates

A certificate shall be issued to each applicant who successfully passes such examination, and any person who has received such certificate shall be known and styled as a licensed contractor, and no other person and no partnership, all the members of which have not received such certificate, shall assume such title, or any words, letters or abbreviations tending to indicate that the person or the firm so using the same is a holder of such certificate.

Fees

Any person making an application for examination shall accompany such application with a United States money order or a certified check, endorsed to the treasurer of the State of Wisconsin in the sum of.....Dollars. Should such applicant be rejected, or should such applicant fail in such examination, such money order or check shall be returned to the applicant, but immediately upon the successful passing by the applicant, such check or money order shall be deposited in the treasury of the State in the manner provided by law and shall be added to the general fund.

Penalties

Any person violating any provision of this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished for the first offense by a fine of not less than Ten Dollars ($10), nor more than One Hundred Dollars ($100), and for a second or subsequent offense by a fine of not less than One Hundred Dollars ($100), nor more than Five Hundred Dollars ($500), or by imprisonment for not more than one year, or by both such fine and imprisonment.

Contractor Wins Case

The judgment against the Matthews Construction Company and owners of the Forum building, Sacramento, for $5,000, in favor of Mr. James F. Smith, rendered in the Sacramento County Superior Court, Judge Peter J. Shields presiding, has been affirmed by the Supreme Court.

Mr. Smith alleged in his suit that the construction company, a sub-contractor, had done poor work on the Forum building, using materials below grade, and not in keeping with the specifications, with reference to cement and plaster work. Mr. Smith claimed that he was put to extra expense to remedy the defective work.

Mr. C. J. Matthews and Lettie P. Matthews, the Forum Investment Company, Mr. R. A. Herold, architect; Mr. Frank J. Ruhstaller and the Sacramento Bank were named as defendants, as having some interest in the building.

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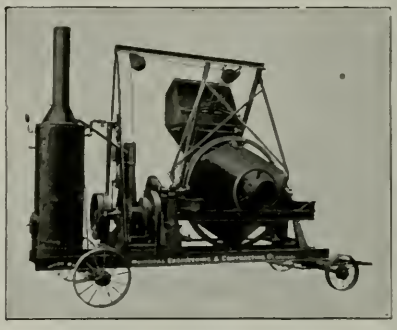

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What Is an Engineer?—More Definitions

Every engineering magazine we've picked up for the last month or so has had its fling with some "definition of an engineer" or of "engineering." Has an awakening to self-consciousness suddenly come over the engineering profession? Must everybody leave his work and take time to define it, or stand before the mirror and preen himself with words? At all events, Concrete, of Detroit, offers its apologies and tosses these into the ring. "Take one"—or leave 'em.

An engineer is the hostler of humanity, who harnesses the materials and forces of Nature to the carry-all of progress. Or:

An engineer is humanity's defender against Nature's destructive forces. Or:

An engineer is one who discounts tomorrow's expenditures by today's forethought.

But seriously now, how would this do? Engineering — Application to the world's work of a knowledge of materials and forces.

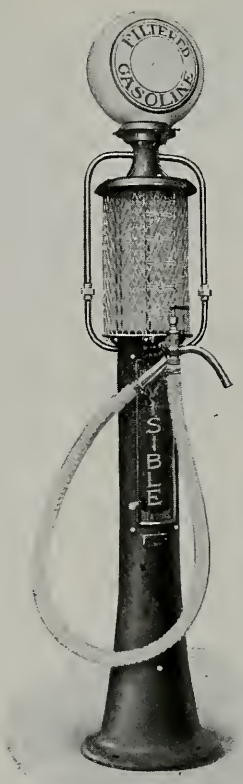
Employment for Engineers

The professional and special section of the United States Employment Service, formerly located at 29 S. La Salle street, Chicago, has removed to new and more extensive quarters at 63 E. Adams street, Chicago. This section, formerly known as the Division of Engineering, will enlarge its service to include all kinds of professional and technical men and women. During the war this branch of employment did notable work in placing engineers and technical men in various branches of the war and the Government. Now its activities will be directed toward reconstruction and peace needs. It will strive to place the best man in the place where he is most needed. No charge is made for this service. Engineers and professional men and women desiring the services of the Professional Section are requested to write to the above address for registration blanks.

Examinations for Highway Bridge Engineers

An open competitive examination for highway bridge engineer to fill three vacancies in the United States Bureau of Public Roads, and future vacancies, has been announced by the United States Civil Service Commission. The entrance salaries range from $2,400 to $3,400 per year.

The duties of this position will involve the making of surveys of bridge sites, superintending the construction and inspection of highway bridges, and



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the design and preparation of plans for highway bridges. Applicants must show that they have at least six years of preliminary engineering experience or that they are graduates in civil engineering from a recognized college. They must also show that they have had at least seven years of responsible engineering experience, of which not less than four years must have been in responsible bridge engineering and not less than two years must have been in responsible highway bridge engineering. Further information may be obtained from the Civil Service Commissions in the larger cities, or from the U. S. Civil Service Commission, Washington, D. C.

Construction Company Incorporates

The K. E. Parker Company, construction engineers, 515 Clunie building, San Francisco, has incorporated with Mr. K. E. Parker as president and general manager. Mr. Parker was formerly with the Clinton Construction Company, but for the past year has been contracting for himself, some of his more recent work being the building of the new Hippodrome Theatre in San Jose and the construction of an electrical storehouse for the United States Government at Mare Island.

Large Painting Contracts

D. Zelinsky & Sons, Inc., of 420-422 Turk street, San Francisco, have recently been awarded the painting contract for ten large repair shop buildings being erected near Los Angeles, Cal., for the Pacific Electric Company. This firm is also executing a great deal of other work in Southern California and Arizona.

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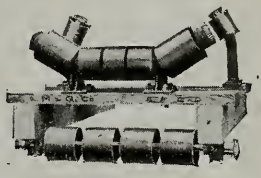
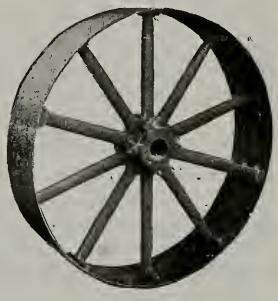

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Pratt's Shippers' Record Book

Mr. Clarence F. Pratt, president of the Pratt Building Material Company of San Francisco, has just published and copyrighted a three hundred-page record book entitled "Pratt's Labor-Saving Freight Paid and Shippers' Record Book, with Recapitulations."

There are nine specially ruled sections, as follows: "Freight Paid and Other Information on Carload Shipments Only"; "Charges Paid on Less than Carload, Steamship, Motor Freight, Stage and Express"; "Claims Record Against Railroad, Steamship, Express, Motor Freight and Stage Companies"; "Record of Cars Placed for Loading and Unloading"; "Recapitulation of Freight Paid and Other Information on Carload Shipments Only"; "Recapitulation of Charges Paid on Less Than Carload, Steamship, Express, Motor Freight and Stage Companies"; "Freight, Express and Other Rates Quoted by Transportation Companies, Traffic Managers, Transportation Experts and Our Own Traffic Department"; and "Names, Titles, Addresses of Officials of Railroad, Steamship, Express, Motor Freight, Stage or Other Transportation Companies."

Mr. Pratt has had a great deal of experience in shipping and paying of freight to railroads, steamship companies, etc., as his new book indicates.

The Record Book contains many suggestions from officials, together with copies of forms used by the Standard Oil Company, the Railroad Commission of California, the Southern Pacific Railroad Company, the Atchison, Topeka and Santa Fe Railway Company, and a number of transportation experts.

Gravel Company Expands

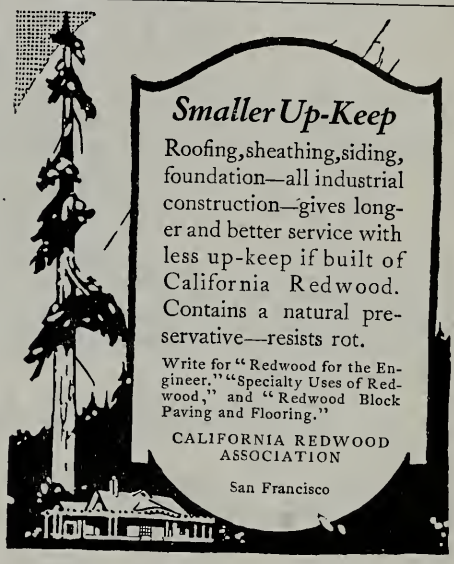
The California Building Material Company, whose gravel and sand plant at Niles has been in successful operation for the past eleven years, and whose gravel and sand products have been used exclusively on many important concrete structures, the specifications of which were rigid and exacting, have made the interesting announcement that they have acquired the famous gravel properties and plant of the Grant Gravel Company at Eliot, near Pleasanton.

With these augmented facilities, the California Building Material Company is now equipped to deliver a total of 5000 tons of washed gravel and sand every twenty-four hours.

Service and quality have been the potent factors in the rapid growth of this company, the largest producer of gravel and sand in Central California, with main offices located in the New Call building, San Francisco.

Berkeley Residence

Mr. John H. Thomas, First National Bank building, Berkeley, has prepared plans for a two-story frame residence, six rooms with hardwood floors, to be built at Piedmont for Mr. Matt Koski, 35 Ramona avenue, Oakland. Mr. Thomas also has prepared plans for a frame garage for Dr. Kruse at San Diego and San Juan streets, Berkeley.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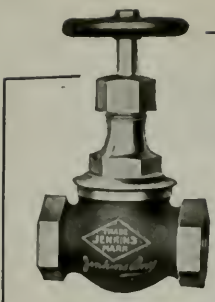

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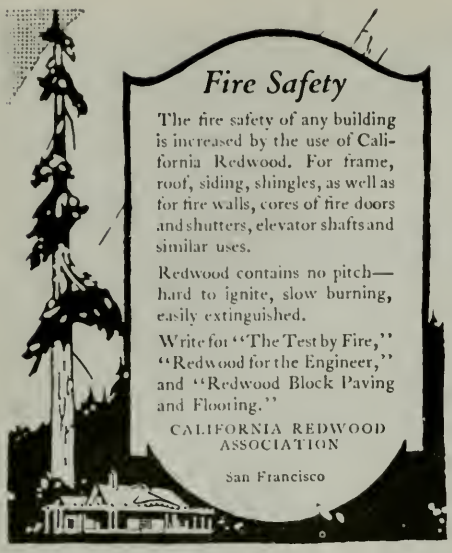

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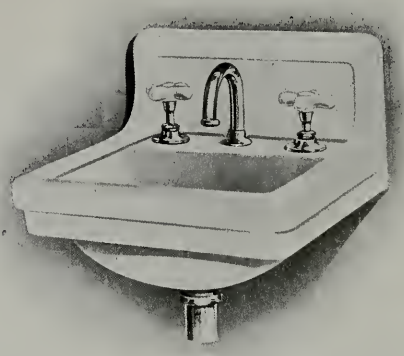

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT

Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market street, San Francisco.
Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH

Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT

Mauerene Likwid Sement, sold by the Imperial Company, Monadnock Bldg., San Francisco.
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT GUN

Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL

Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS

W. E. Mushet Co., 502 Mission St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS

T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS

United Electric Co., Canton, O., mfr, of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.

CONCRETE CONSTRUCTION

Barrett & Hilp, Sharon Bldg., San Francisco.
Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.

CONCRETE MIXERS

Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.

CONCRETE REINFORCEMENT

United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.

CONCRETE SURFACING

"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL

Barrett & Hilp, Sharon Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.

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GENERAL CONTRACTORS (Continued)

Monson Bros., 1907 Bryant St., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.

CONTRACTORS' MACHINERY

Harron, Rickard & McCone, Townsend St., San Francisco.

CONVEYING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CORK TILING, FLOORING, ETC.

Be-ver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK

California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Mauerene," sold by Imperial Co., Monadnock Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Engineering Co., 530 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Geo. A. Sittman, 21 Beale St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS

Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL

Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

FANS AND BLOWERS

John Ringius, 252 Townsend St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE

Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT

S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES

Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC

General Fire Extinguisher Company, 453 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS

Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

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FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.
Oak Flooring Manufacturers' Association, 1014 Ashland Block, Chicago.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralph Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

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"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Holloway Expanded Metal Company, 517-39 Second St., San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS

American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

OIL FILTERING AND CIRCULATING SYSTEMS

S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

OIL STORAGE AND DISTRIBUTING STATIONS

S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE

California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PAINT FOR CEMENT

Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.

The Paraffine Companies, Inc., 34 First St., San cisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

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I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.

Aspromet Company, Hobart Bldg., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
Magner Bros., 414-424 Ninth St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER

White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK

California Brick Company, Niles, Cal.

PIPE STEEL

Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA

Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS

The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY

U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS

MacGruer & Co., 180 Jessie St., San Francisco.
Simpson A. Knowles, Call-Post Bldg., San Francisco.

PLUMBING CONTRACTORS

Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.

California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLUMBING FIXTURES, MATERIALS, ETC. (Continued)
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POTTERY
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PUMPS
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco.
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid." manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Aspromet Company, Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Building Materials Co., 525 Market St., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

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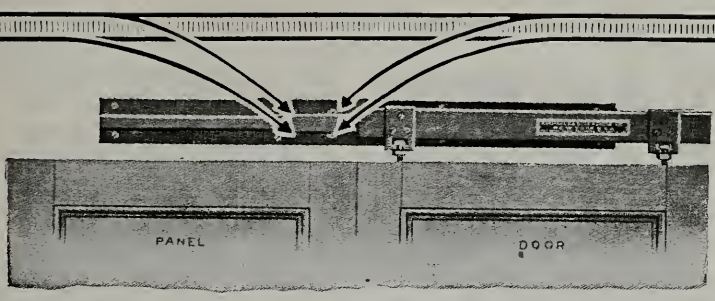

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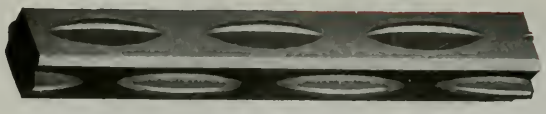

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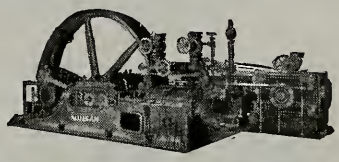

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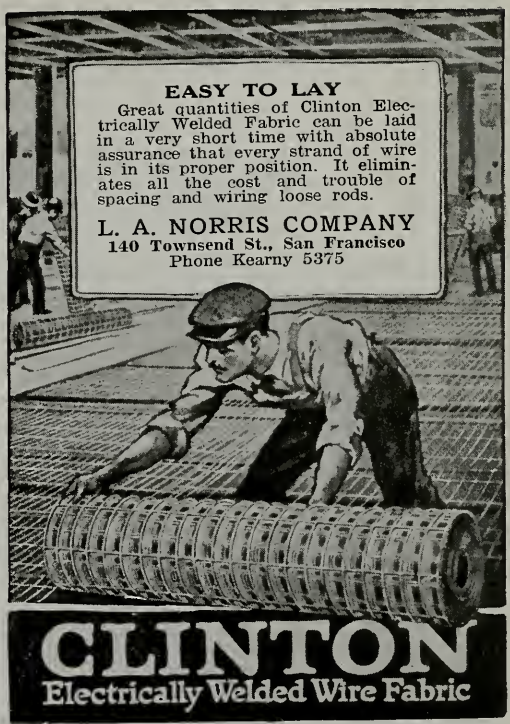
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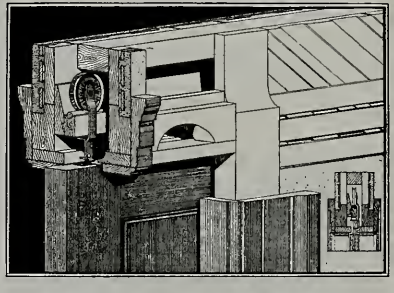

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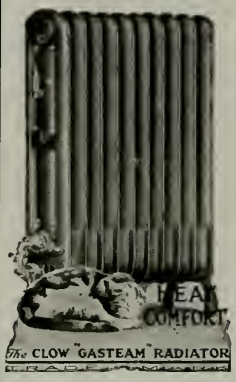

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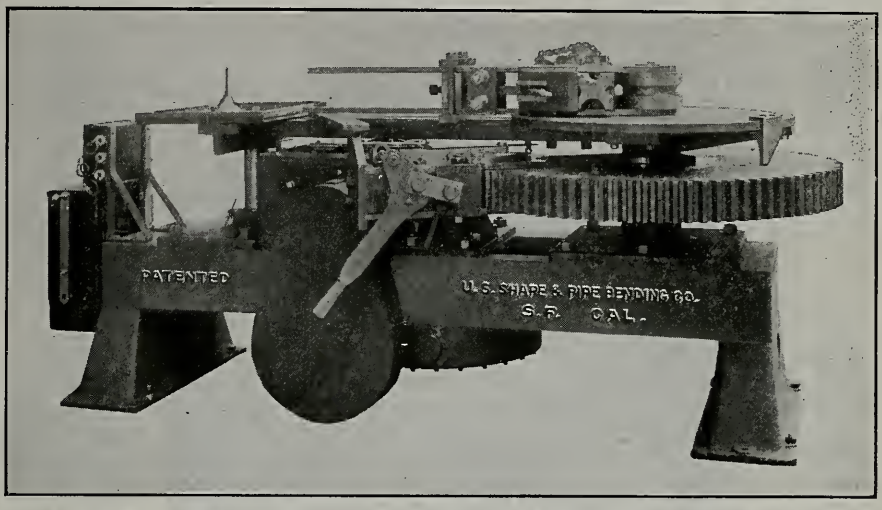

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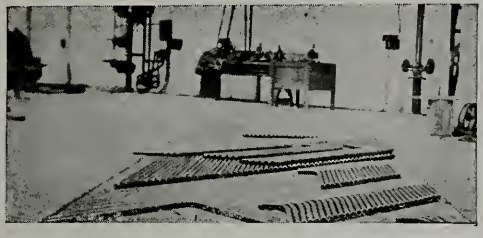

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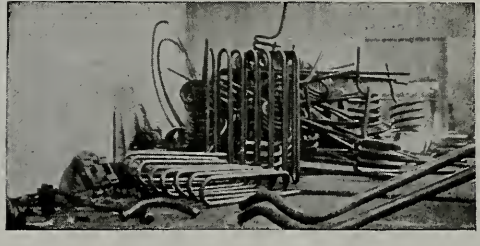

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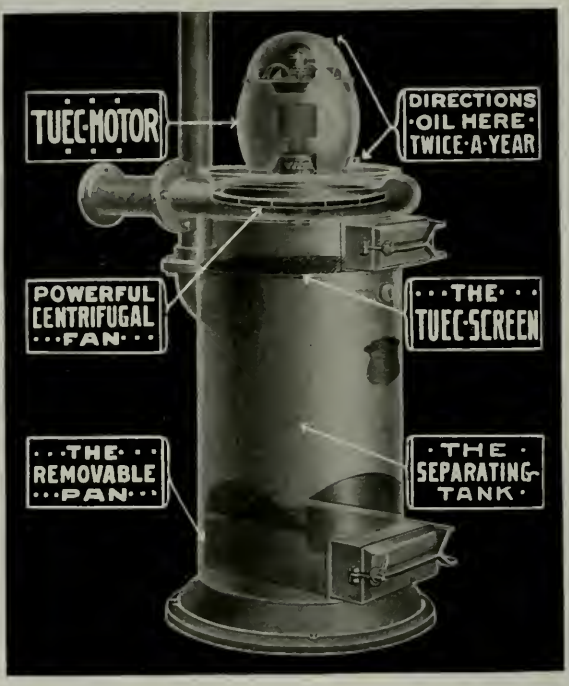

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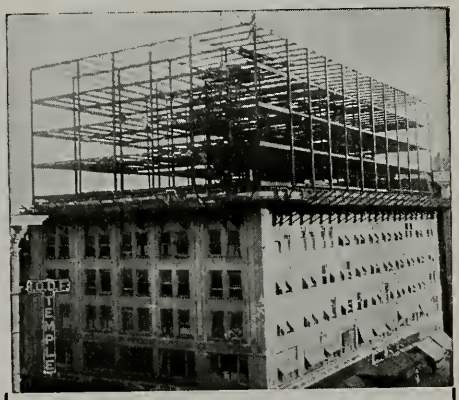

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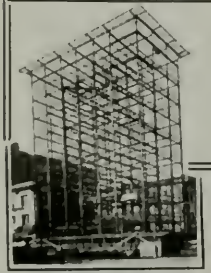

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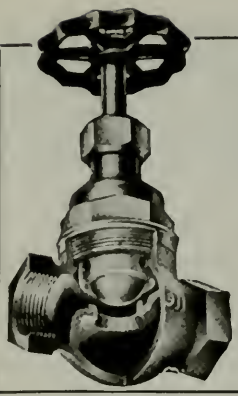

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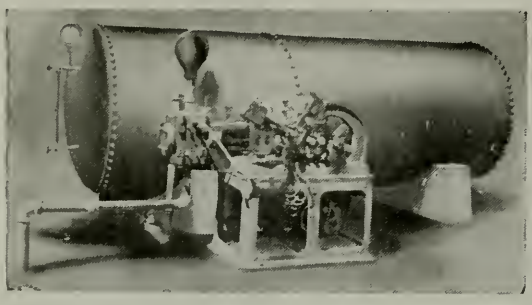

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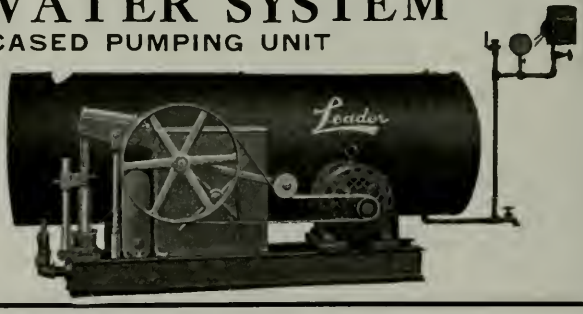

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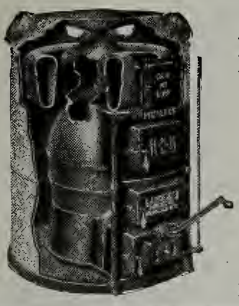

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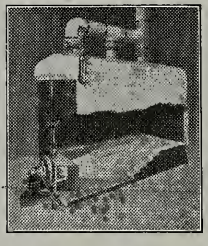
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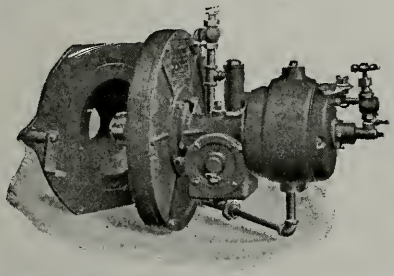

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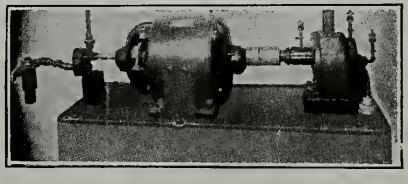

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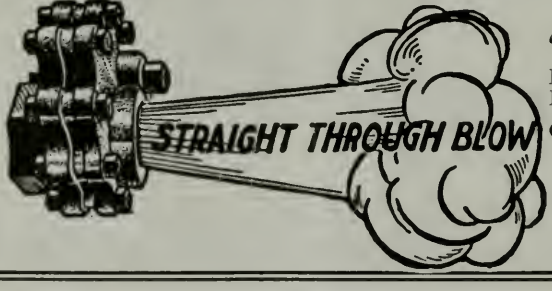

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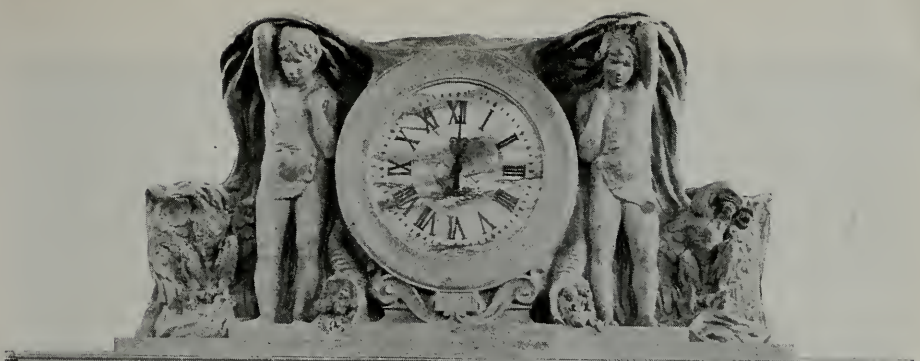

The Architect and Engineer

Volume LVII. OF CALIFORNIA Number 1.

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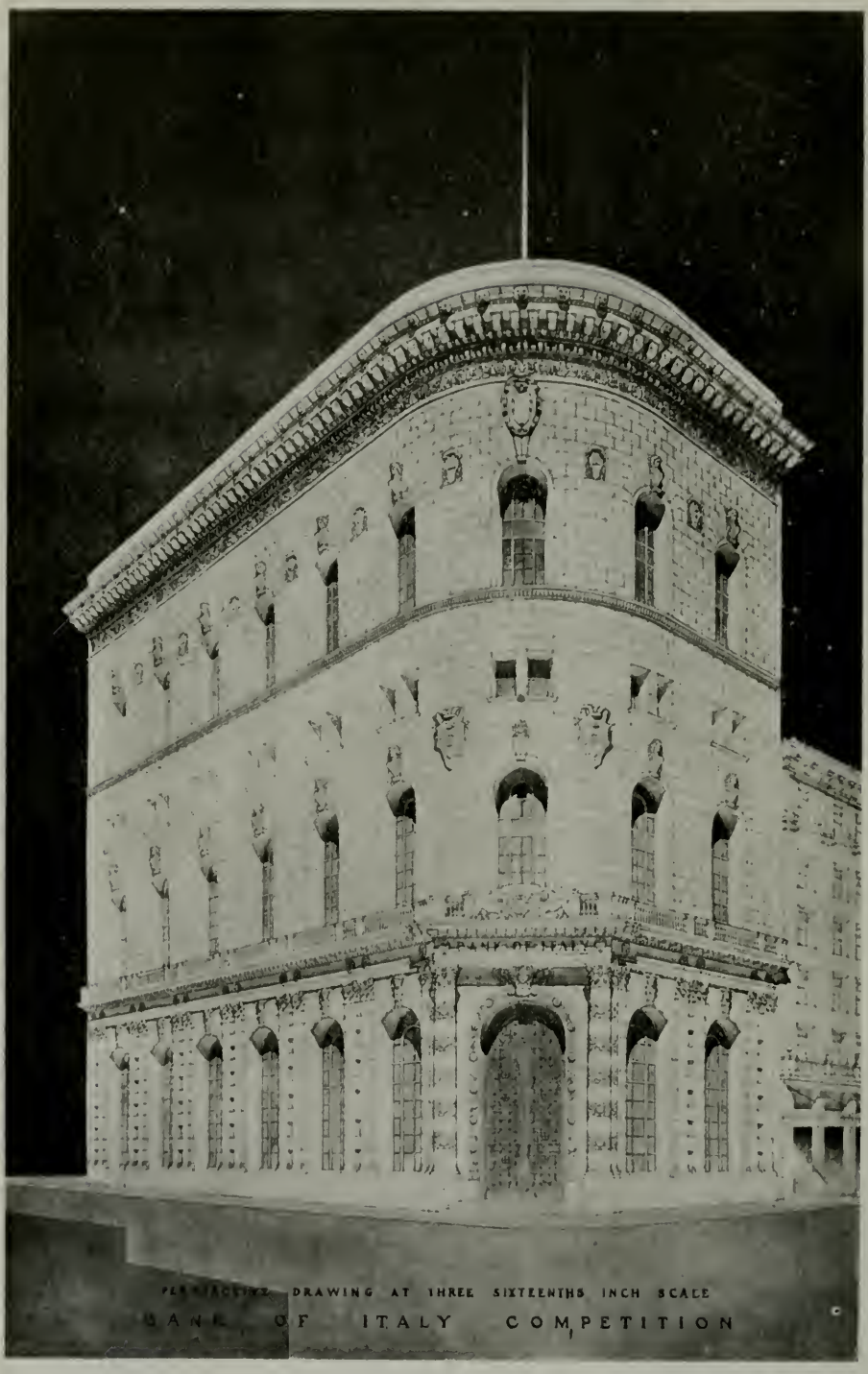

PERSPECTIVE, BANK OF ITALY BUILDING, SAN FRANCISCO. BLISS & FAVILLE, ARCHITECTS

Awarded First Prize

THE
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APRIL, 1919 Vol. LVII. No. 1

The Bank of Italy Competition*

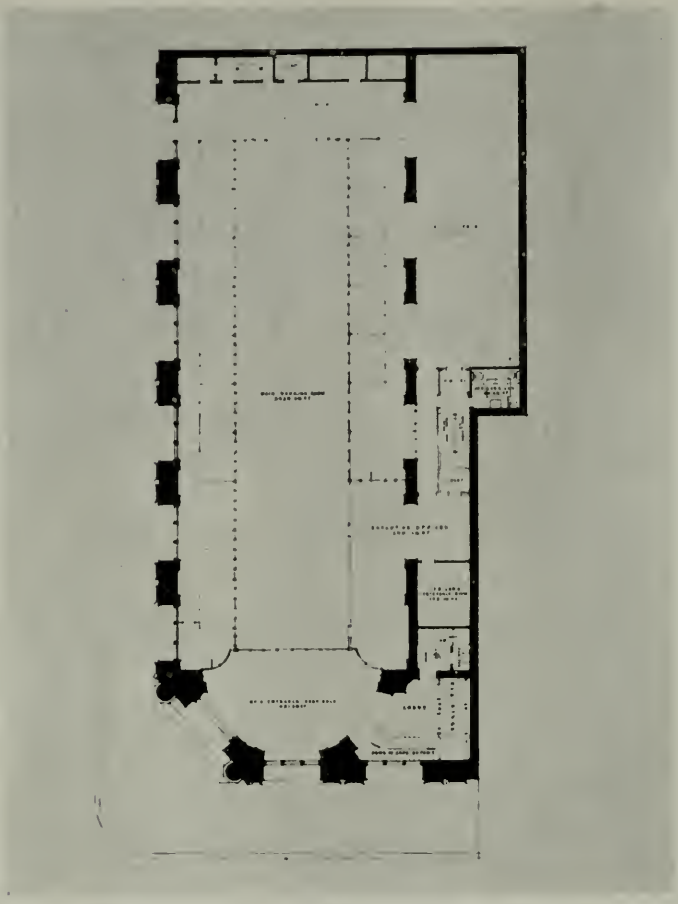
By WARREN C. PERRY, Architect

A PERUSAL of the programme governing the recent competition for the new Bank of Italy building which is to occupy the northwest corner of Powell and Eddy streets, San Francisco, a spot, it may be remarked, hitherto dedicated to the rapid disbursement of funds rather than the gradual accumulation of the same—discovers a noteworthy feature. There is apparently an unusual tendency to limit the designer to a preconceived scheme, at least in its broader aspects. The entrance is to be in a given location with reference to the lot—namely on the corner facing Market street—the Trust Department is to be on the second floor with the legal offices—the third, fourth and fifth floors are to be left empty, but are to be of such nature as to be good office space for general renting purposes—the sixth floor is to contain rooms devoted to employees' welfare, including a small auditorium, etc., etc.

Without debating the merits or faults of this type of programme, it is obvious that it puts the judgment on the basis of handling or treatment rather than of "parti"—in other words—of taste rather than of logic—if, after all, the two are separable. In other words, the interrelation and size of the various elements being largely given, the task becomes one of clothing and expressing this organism.

The only important exception to this generality is found in that part of the programme dealing with the entrance—I had almost said vestibule, since that word is so used as to seem to make a separate vestibule mandatory—which has resulted in an interesting variety of solutions and arrangements for this element of the plan. The winning design by Messrs. Bliss & Faville and the splendid plan put out by Mr. Lewis P. Hobart both cut the Gordian knot by having no vestibule motive at all, thus obtaining an enormous advantage on the compara-

* There were eleven architects invited to compete and the bank awarded cash prizes of $1,000 each for the four best plans in addition to the winning design. A perspective and first floor plan of each of the five prize-winning designs are shown. The jury was composed of Mr. Ellis F. Lawrence, architect of Portland, Oregon; Mr. David C. Allison, architect of Los Angeles, and Messrs. A. P. Giannini, P. C. Hale, and J. A. Bacigalupi, representing the bank. Mr. Sylvain Schnaittacher, president of the San Francisco Chapter, A. I. A., acted as architectural adviser.—EDITOR.

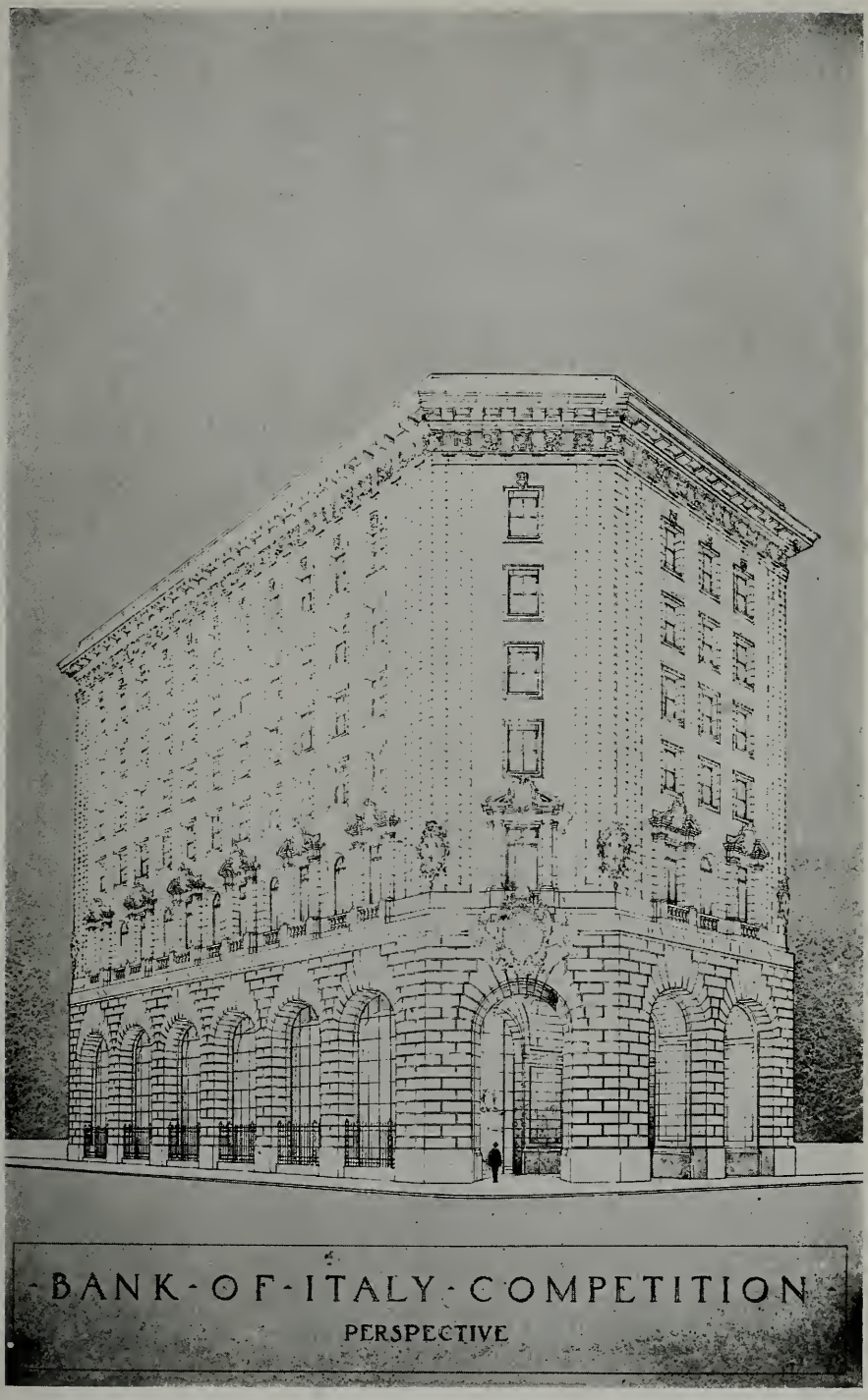


FIRST FLOOR PLAN, BANK OF ITALY BUILDING
Bliss & Faville, Architects

tively small lot, in being able to have banking rooms of great size and openness —separate access to the Safe Deposit area in the basement being arranged in this case through a small lobby. The buildings exhibited range all the way from the no vestibule type to the fine elliptical entrance loggia in the design of Messrs. Bakewell & Brown, which, however consumes almost a quarter of the plan area.

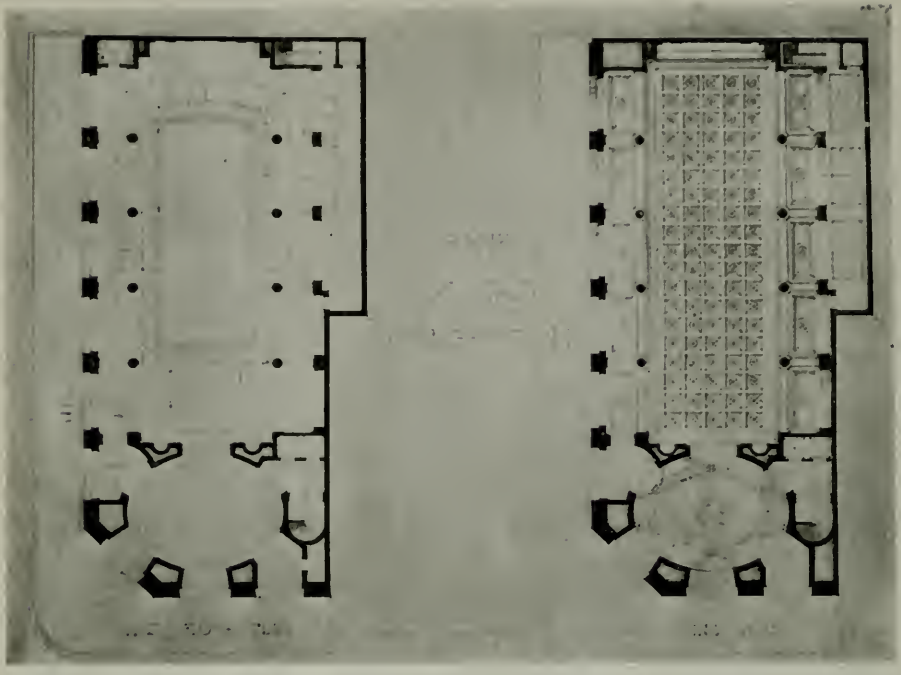
Turning then to the exteriors, we find the real variety--from the great Florentine wall of the winning design (which unhappily, due to uncompromising cube restrictions, soars twenty feet above the roof in an ambitious parapet) to the conventional down-town type with a variant in the colossal but brief colonnade of Messrs. Reid. This wall treatment of Messrs. Bliss and Faville, pierced by fine arches and topped by a many corbelled cornice, has much of the force of its prototype, enough at least to carry it through to first place—and if sympathetically carried out will make a dignified building—unless the rude hand of commerce reaches in to carve more windows for those big offices lighted only by the tops of those same arches. And while we are criticizing—cannot that misfit, where the flat entrance motive seeks hopelessly to adjust itself to the curved wall above, be re-studied?

In contrast to the design discussed above we have the franker type that displays on its surface the indication of the different strata of the interior—banking

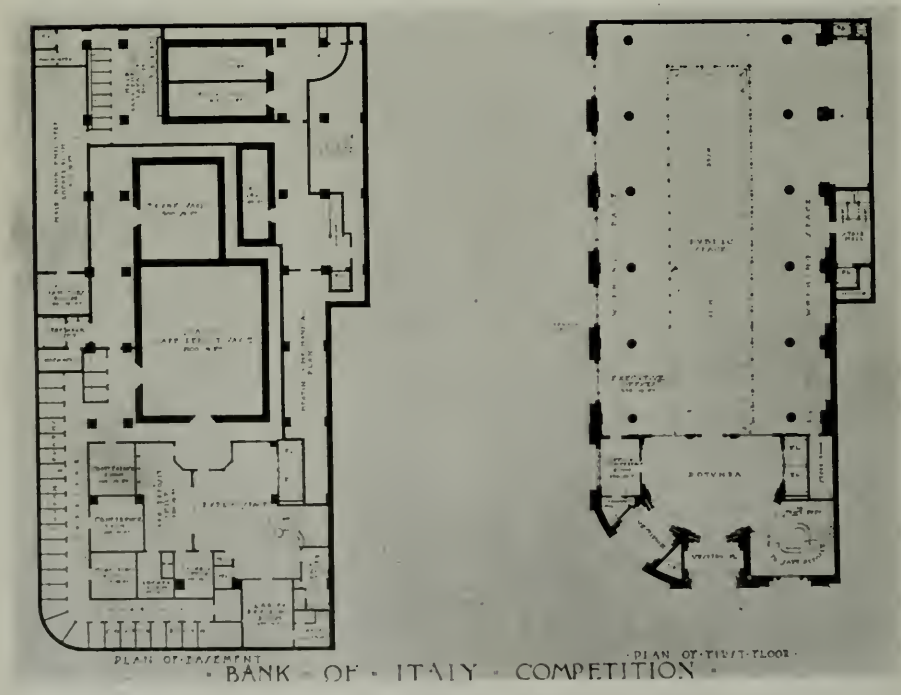


PERSPECTIVE, BANK OF ITALY BUILDING, SAN FRANCISCO. BAKEWELL & BROWN, ARCHITECTS

Awarded $1,000 Prize



FIRST AND MEZZANINE FLOOR PLANS, BANK OF ITALY BUILDING
Bakewell & Brown, Architects



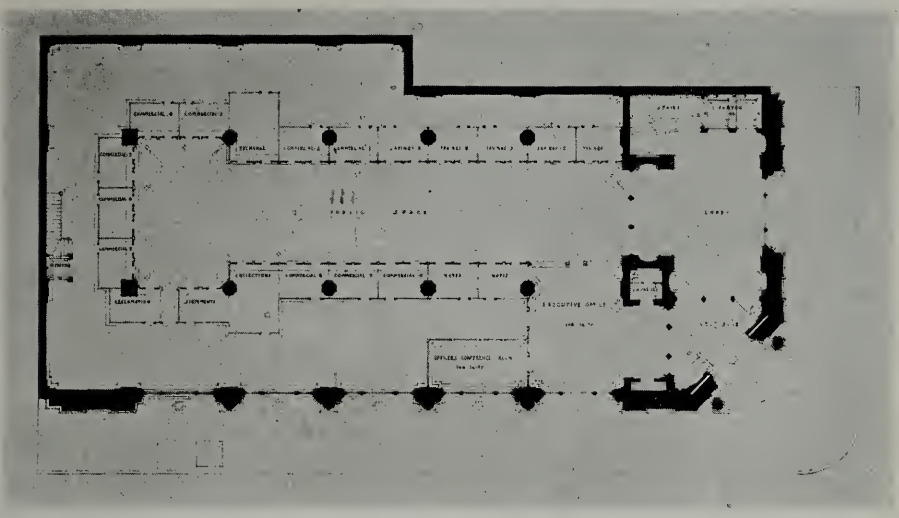
BASEMENT AND FIRST FLOOR PLANS, BANK OF ITALY BUILDING
Reid Bros., Architects

PERSPECTIVE, BANK OF ITALY BUILDING, SAN FRANCISCO. REID BROS., ARCHITECTS

Awarded $1,000 Prize

PERSPECTIVE, BANK OF ITALY BUILDING, SAN FRANCISCO. WEEKS & DAY, ARCHITECTS

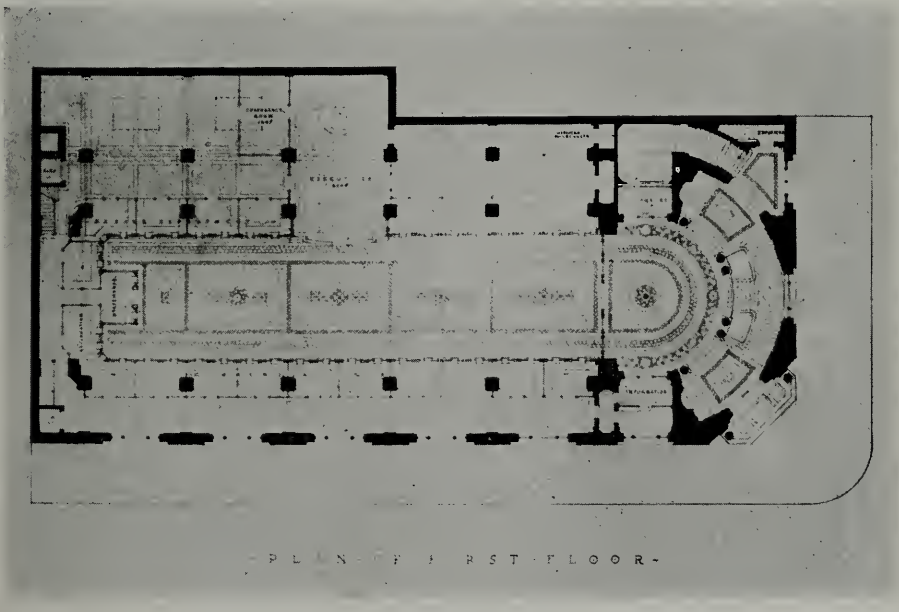
Awarded $1,000 Prize



FIRST FLOOR PLAN, BANK OF ITALY BUILDING
Weeks & Day, Architects

room, trust department, three office floors and welfare for employees, with fenestration appropriate for each, studied and decorated into a design—of this sort the best example is that of Messrs. Bakewell & Brown aforementioned, which, while not in their best vein, is characteristic of that firm's clean-cut sense of composition and disdain of triviality.

Messrs. Weeks & Day alone availed themselves of the privilege to show color in a design of great charm in detail, though perhaps a little too much broken up by the use of different motives.



FIRST FLOOR PLAN, BANK OF ITALY BUILDING
Edgar A. Mathews, Architect

PERSPECTIVE, BANK OF ITALY BUILDING, SAN FRANCISCO. EDGAR A. MATHEWS, ARCHITECT

Awarded $1,000 Prize

A number of the competitors, notably Mr. Edgar Mathews and Mr. William C. Hays, economized cubage sufficiently to show loggias or short towers surmounting the angle of the building—there is even one low dome—by which little was gained, since the projected building will be so situated that none but a lofty pinnacle could count. This, by the way, invites mention of Mr. E. T. Foulkes' reactionary contribution, which broke away from the complacent six-story idea so apparently laid down in the programme with a mighty tower that sucked up all but the two lower floors with it, like a huge stone waterspout. It was frankly an effort to make a high building, and not a bad one at that.

Finally in this scattering analysis, bearing in mind always the limiting conditions laid down beforehand, let us look at the sections, too often the neglected offspring of plan and elevation reared upon divergent lines. Two of these stand out—the delightful one by Messrs. Weeks & Day very fully worked out in high Renaissance, presented with spirited drawing; and the magnificent interiors of Mr. Hobart's design mentioned above. There is no question in the writer's mind but that, considered from the standpoint of the section, this design was the strongest presented. Even with a certain lack of monumental quality in the facade, it is hard to see why this good scheme, so forceful and at the same time so admirably restrained, should have received no recompense. It deserved recognition at least.

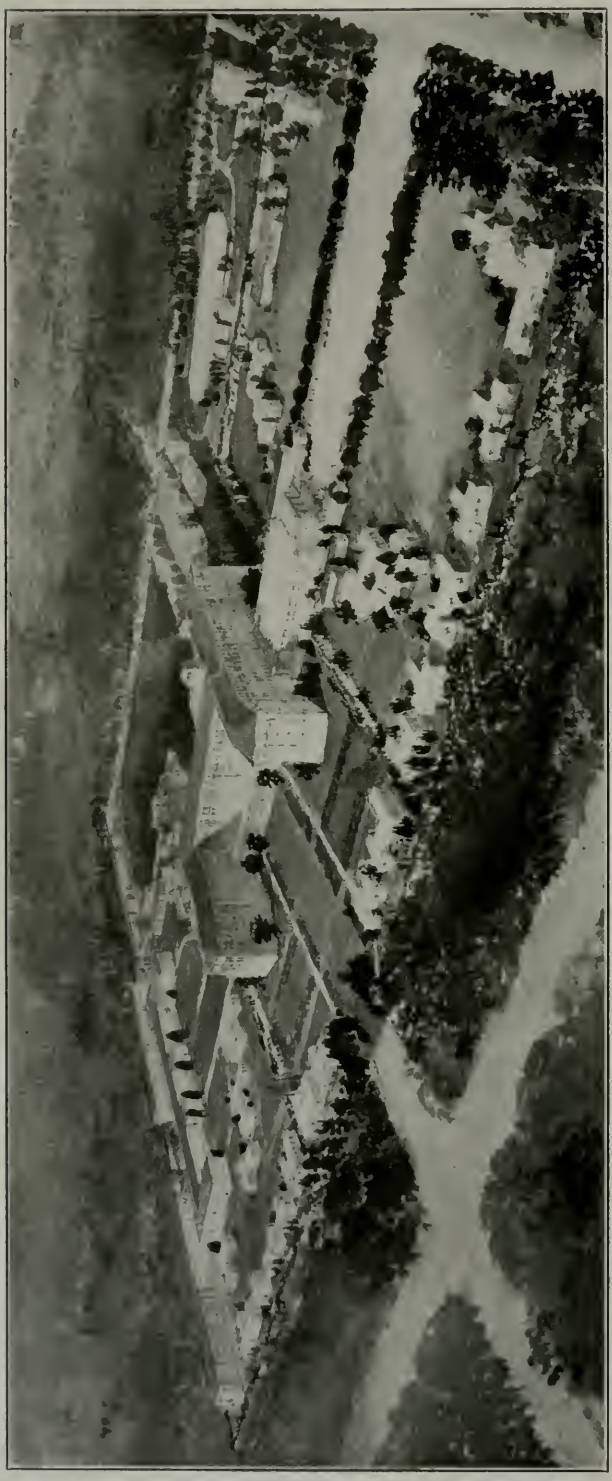
But then nothing can be more true than that different individuals see through different eyes, and the jury, acting as it did undoubtedly in good faith, was after all a group of individuals.

So another competition has run its course to a decision—to the amazement and incredulity of our brother in the business world who fails to see why so much should be staked by reputable practitioners on a slender chance of victory. But then, what can he know of the joys of the "charrette"? And while competitions may not "pay"—is there anything else that so stimulates an office, so refines and strengthens its spirit, as these same competitions? We hope sincerely that the Reformers, with which we seem overburdened these days, will not direct their energies in this direction.

* * *

Architectural Practice Demands Institute Inquiry

At the April meeting of the Southern California Chapter of the American Institute of Architects the business of the evening was a discussion of architectural practice as it is being considered by the post-war committee of the Institute. The architects of the East have been considerably exercised by the lack of recognition accorded architects and the American Institute by the Government in the Federal building programme during the war and the post-war committee is working to determine the cause and to secure suggestions for its correction from the various chapters. Mr. Bert L. Fenner, executive secretary of the Institute, was recently in California, on a tour of the country, and asked that the Western chapters consider the problem thoroughly under two divisions: "What is the matter with architectural practice?" and "Do the canons of ethics of the Institute need revision to be of more assistance to the architects?" Both of these questions will be considered at the Institute convention which will be held next month at Nashville, Tenn. The members of the local Chapter are firmly of the opinion that the only way the architects can secure better recognition is by rendering greater service. The most successful architect will be the one who renders the most efficient service. It was suggested that the architects should exercise particular care to see that plans and specifications were complete in every detail and not liable to misinterpretation. Also that the architects should pay closer attention to their work after the contracts are let and assume a greater responsibility in the superintendence of the work.



CALIFORNIA HOTEL, LOS ANGELES
MYRON HUNT, ARCHITECT

$1,250,000 Tourist Hotel for Los Angeles

PLANS for the new California hotel to be built on a 43-acre site in Los Angeles are well under way and it is expected that construction will be started within sixty days. Mr. Myron Hunt is the architect. The plans embrace a main hotel building containing 450 guest rooms, a group of bungalows, thirty-six being provided for with fifty other available sites possible, a casino, public and private garages, a school for hotel children, open and glass enclosed swimming pools, tea houses and playgrounds. The hotel and bungalows now projected will accommodate about 1000 guests. Future apartment houses and a hotel annex are contemplated in the general plan.

The main hotel building will be five stories with a high basement, laid out in the shape of a letter H, with the main wings approximately 500 feet in length. The lobby will be 65x182 feet, the dining-room 106x180 feet, and the auditorium 160x88 feet. Eleven hundred guests can be seated in the dining-room at one time and the auditorium will accommodate 2000 persons. This building will be fireproof construction with reinforced concrete frame and floors, hollow tile filler walls, cement plastered exterior, clay tile and composition roofing. All of the auxiliary buildings will be of hollow tile construction and the bungalows will be frame and plaster. The bungalows will contain from six to ten rooms each. The estimated cost of the buildings and ground improvements now projected is $1,250,000. The aeroplane view of the hotel, on the opposite page, is shown by courtesy of Southwest Builder and Contractor.

* * *

Statistics Disprove Rent Profiteering

THOSE who make the charge of rent profiteering will be able to derive no satisfaction from the report of the National Industrial Conference Board made public the other day. This report was based on figures compiled in representative industrial communities throughout the country.

The object of the board's investigation was to determine what has been the actual increase in the cost of living since the war started in 1914. The board finds that there has been an average increase between July, 1914, and November, 1918, of about 65 per cent in the cost of living. Food, it is stated, costs 83 per cent more, clothing 93 per cent more, fuel and light 55 per cent more and sundries 55 per cent more. While these important items of living cost have been advancing so greatly, the board finds that the cost of shelter shows an increase of only about 20 per cent.

The information upon which the board based its report was gathered in between forty and fifty cities throughout the country. The advance in food and clothing is shown to have been the principal item of added living cost in the different cities, although the cost of sundries showed a heavy increase. As a general rule the cost of coal showed a greater increase than that of gas and electricity, while in many localities the rates for gas and electricity for domestic use remain the same as in 1914.

Data bearing on the cost of shelter was derived from chambers of commerce, real estate boards, brokers and charitable and civic organizations in nearly one hundred cities. The figures show that in New York City rents have advanced less than 20 per cent as compared with 1914, while in Philadelphia, Baltimore and Cleveland the advance has been practically about 20 per cent. In some cities, it is reported, there has been no appreciable change.

* * *

Million Dollar Office Building

Messrs. Reid Bros., architects, have been commissioned to prepare plans for a fourteen-story $1,000,000 office building to be erected at Powell and Post streets, San Francisco.

MARCHBANK APARTMENT BUILDING, SAN FRANCISCO
J. F. DUNN, ARCHITECT

Poor Designing One Reason for Apathy in Apartment House Building

By J. F. DUNN, Architect

DESIGN has been able to demonstrate its own saleability, which indicates no insignificant forward step in our valuable art producing trades—trades which represent in these United States an annual expenditure of no less than five billion dollars for home furnishings alone! Industrial art products, since the beginning of time, have commanded higher prices only in proportion as a high degree of attractiveness was super-added to absolute mechanical perfection and suitability for a given purpose.

The manifold economic conditions compelling in all large cities here and abroad the housing of people in apartments should make this as important a subject for design as other structures for our ablest architects, but the best architects, for obvious reasons, have not been keenly interested in apartments, which I consider as one of the reasons for the present lack of interest in substantial building and real estate. Despite the want and necessity of building apartments and the commendable optimism of brokers, there is a curious reluctance (and there has been for ten years) on the part of the real investing public to put their savings in apartments, or, for that matter, in any form of real estate, which was at one time, next to Government securities, considered the best investment for private funds.

The unexpressed reasons that have discouraged investors in real estate and banks to loan liberally on buildings is the twenty millions of dollars' worth of obsolescent houses, flats and alleged apartments built without architects and in the cheapest manner possible, solely for speculative purposes. The cutting up of good hay fields into twenty-five-foot city lots by enterprising suburban land sharks has further contributed to a lack of confidence in legitimate real estate investments. But, obsolescence and depreciation are the particular bad influences that have demoralized legitimate building. The well intentioned but uninformed owner or greedy speculator without training as a builder, obtains by hook or crook enough blue prints to get a building permit and a large loan in proportion to the gullibility of the mortgagee. What they call planning is an arrangement where the occupant can get into the box-like rooms and what Gustave Flaubert calls "The most useful object in the house" from a long hall. These buildings are often of wood frame and when covered on the sides, as well as the front, with cement plaster, the poor tenant often imagines he is living in a reinforced concrete building until fire drives him out some night in his pajamas. The mechanical equipment is as cheap as possible, but the fixtures all shine long enough to permit of the building being filled with professional tenants and placed on the market for sale, or, rather, a trade. Trade is mentioned because cash sales have been for years an exception and, when made, are bragged of in the newspapers.

Trading is indulged in where each party thinks he possesses the worse lemon, and swaps with inflated values. The speculating builder takes, for instance, a farm or anything that sufficient cash can be borrowed upon, showing a profit over his equity. The loan, of course, is arranged for pending confirmation of the deal, so that no chances are taken. With this cash in hand the mortgage is sloughed and this procedure is known along real estate row as "sluffing" or "Rusoing" a deal. Such methods are not conducive to the welfare of architecture or even good building.

PLAN OF FIRST AND UPPER FLOORS
MARCHBANK APARTMENTS

One can see six-story brick buildings tied together by wood joists, ordinary plaster of Paris for exterior cornices painted to imitate stone, equipped with scrap brass plumbing fittings, second-hand drainage pipes, absolutely no deadening in floors or partitions. Such buildings, if survivors of "that April day again," will be added to the twenty million dollars' worth of obsolete houses and flats we have in San Francisco. In the meantime, for the want of anything better brokers are selling them. Banks have confused these cheap buildings with permanently designed buildings and refuse to make the same sized loans on improvements as Eastern cities; all this to the discouragement of brokers and their investors, injury and loss to architects, builders and the city.

Were an architect employed on the above he would for an additional two per cent on the cost of a reinforced concrete building, with the present high cost of lumber, give a fireproof floor of concrete and tile the saving of metal ceilings, insurance and the attending security against fire which tenants are willing to pay take care of this designed construction. Increased standards in constructive design is architecture and not the gingerbread which jerry-builders and uninformed owners often imagine. It is criminal, and especially so on this coast, to use twelve-inch brick walls on the upper floors of six-story apartment houses for the only reason that it is easier to contract for brick walls as per "Building Laws" than to prepare the necessary designs for a reinforced concrete frame.

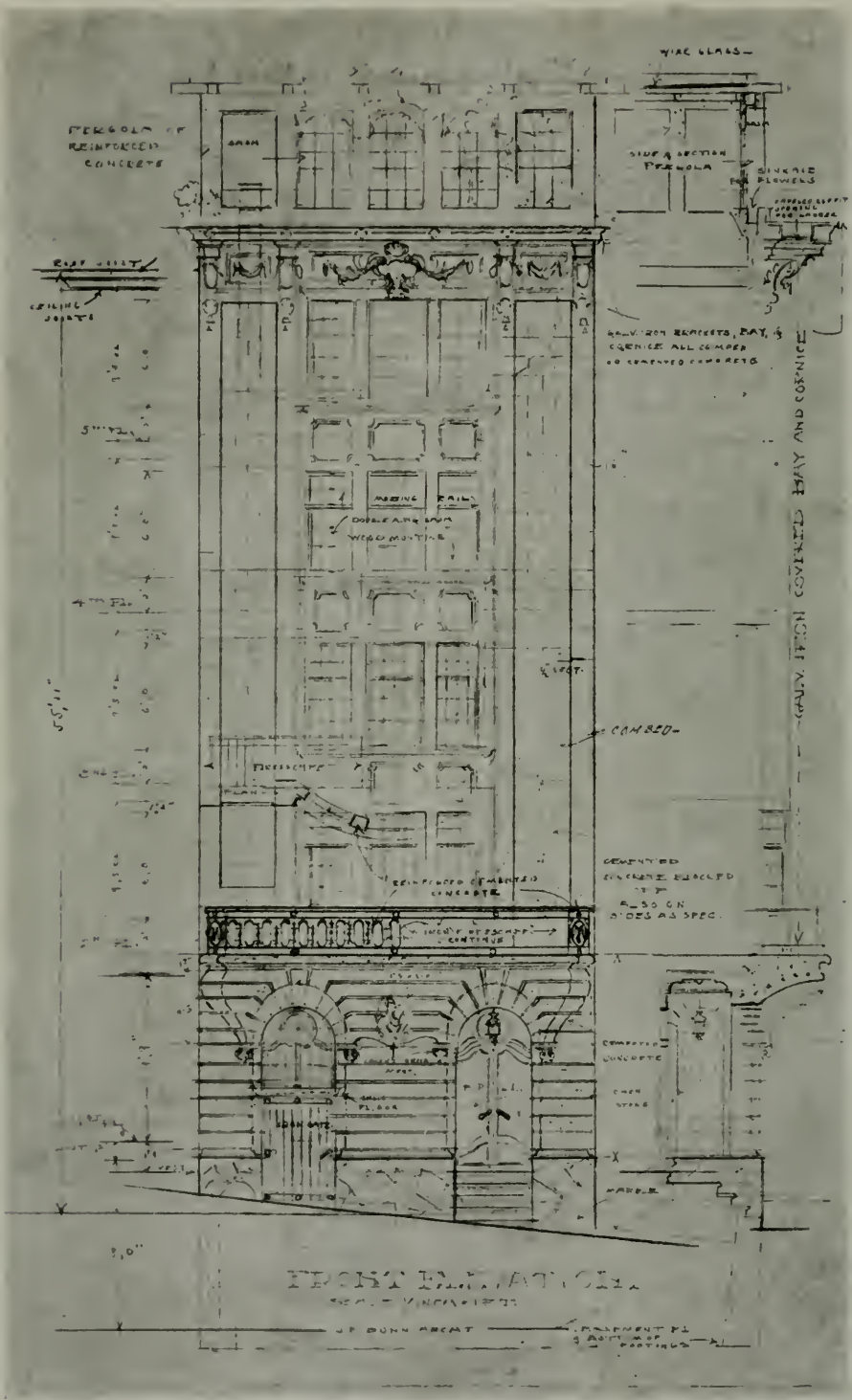
Mr. Ernest Flagg, the New York architect, in the Architectural Review, about fifteen years ago, said that ignorant planning of buildings was one of the most extravagant habits of the American people, that the waste due to faulty design equaled our annual fire loss, and gave as an illustration the largest apartment hotel* building then being built without an architect on upper Broadway. He showed by a sketch a better general plan eliminating several small, inadequate courts with the attending necessary architectural ornamental returns, a much simpler floor plan, effecting a half million-dollar saving of material and renting value.

In New York a few months ago I was amused to see this very apartment house undergoing alterations and changes to have it compete with buildings erected by architects. What would Mr. Flagg say to our largest apartment house with the loss of money and architectural opportunity, its borrowed plan with an enclosed court instead of one opening to the south—the New York building was exquisite in ornamental detail, with good material, by a clever draftsman, but our affair has not even that saving grace; and this misdirected energy and loss in private building is not entirely a private affair, for the consumer in rents and taxes pays for these obsolescent, depreciating buildings, just as surely as the public will pay for misdirected energy, waste or extravagance applied to government utopian war housing, cost-plus schemes, Hog Island shipbuilding, or any of the other political extravagances.

Obsolescence, meaning in every-day talk "old-fashioned," is applied by scientifically inclined realty brokers to land as well as buildings. They make a nice distinction as to obsolescence of a certain locality for a given purpose, and can show apartment house losses on an avenue that became devoted to the auto industry, but obsolescence and depreciation of buildings is a concern of architects.

For owners to obtain an idea of the obsolescence and depreciation of buildings let them picture some of the city departments still living in the old New York City Hall and the stately colonial homes built one hundred years ago along the eastern coast down to the stone vaulted fortress of the seventeenth century on the quay of St. Augustine. Then continue to the

* Ansonia.



FRONT ELEVATION
MARCHBANK APARTMENTS
J. F. DUNN, ARCHITECT

picturesque Spanish and French quarter of New Orleans and sleep in a century-old home of a cotton merchant; take up the trail again and observe the buildings of the Spanish-American missionaries to and up the California coast at Santa Barbara and Monterey, terminating in our own Mission Dolores church. And then—contrast these long-lived buildings with the reply of a present-day jerry-builder to his customer, "Get enough rent out of it so you can afford to burn it down in ten years."

Architects know what all successful owners and building syndicates learn, that every dollar expended in architectural excellence can be reaped many fold in higher rentals and that architectural fees are now reckoned as an essential part of the initial investment in apartment houses of all large cities. Taste is an asset in trade as in life generally. People also have learned that the cost or size of a building is not the only determining factor of its worth. A room paneled with a few pine mouldings, spaced by an architect, might be more valuable than if covered all over with mahogany by a lumber contractor. Maybeck's art palace, covered with cement plaster, is worth the United States Mint made of granite, "Materiam superabat opus."

If size were the determining factor, one would prefer St. Patrick's Cathedral to its neighbor, St. Thomas' Church in New York.

"Material priceless, yet less prized
For its own worth than what the cunning head
Of Mulciber thereon had wrought."*

The two greatest stage successes this season in New York had but three people in the casts.** All this said in business language means that design sells; not the quantitative standard, but quality, perfection, and beauty.

The logical solution for the reluctance to build, due to above mentioned conditions, the increased cost of labor and material without a commensurate increase of rents, is for architects to make labor and material so much more efficient through design by cutting down to a minimum depreciation and practically eliminating obsolescence.

* * * *

The accompanying photographs and plans have been selected as recent examples of intelligently handled apartment house designs in San Francisco. That planned by the writer will serve very well to emphasize my argument that the present apathy in building is not altogether due to high cost of materials and labor. To quote from one of our morning dailies:

"The theory, not basically new, that elegance combined with utility and design, may be found as profitable in apartment building as in other structures, has been strikingly exemplified in the case of the edifice recently completed by Mr. J. F. Dunn, architect, on the east side of Leavenworth street, just north of Geary, San Francisco. The average rent of a four-room apartment in this neighborhood, built by the same workmen and the same materials, is $60. These apartments rent for an average of $120."

The above said in business language means that design pays, and analogously speaking, it does not always require more expense or time for the tailor to cut a suit of clothes beautifully. The scissors might just as well be used in one direction as in the other, were it not for the sake of aesthetics. This building stands on a key lot that measures only 22 ft. 11 in. x 68 ft. 9 in. and contains on each floor a suite of apartments, consisting of stair and elevator-hall, foyer, living-room, oval dining-room, with east and west exposure, opening into each other for entertaining purposes; kitchen, bedroom, bath and dressing rooms. The plan shows axial planning with mirrors terminating vistas to increase the effect of spaciousness. Extreme care is given to scale, not only

* The Sun-God's Palace. Ovid.
** "Tea for Three" and "Sleeping Partners."

OVAL DINING ROOM, MARCHBANK APARTMENTS, SAN FRANCISCO
J. F. DUNN, ARCHITECT

LIVING ROOM, MARCHBANK APARTMENTS

SUN PORCH, MARCHBANK APARTMENTS

BED ROOM, MARCHBANK APARTMENTS
J. F. DUNN, ARCHITECT

in ceiling heights, openings, reveals and mouldings, but in the accessories, such as the console table, wall sconces, etc., and the subordination of all details to the ensemble was what made the building even possible on such a small lot.

The frame is of reinforced concrete, and one of the structural precautions was the deadening of floors by a false ceiling, fulfilling a three-fold purpose—preventing sound to travel out of the apartment, hiding objectionable structural beams and better proportioning heights to different spaces. All plumbing fixtures are in an accessible pipe shaft, built recesses for radiators with packless valves, recesses or boxes for draperies, servidors for tradesmen, ornamental humidors covering exposed radiators, "Marvelight" switches are some of the mechanical apartment house innovations. The decorative work is characteristic of the "Little Trianon." The walls are paneled throughout with ordinary pine painted the same grey color, "café au lait" slightly "aged," in moulding and ornament. Wherever china, wine, women or books require a closet it is a secret panel, pivoted or Soss hinged, so as not to break up the alignment of the paneling. These are numberless but all important details, and though not expensive require the designing, supervision, care and attention of the architect until the building is actually completed.

* * *

Must Not Mention Wages

The United States Employment Service has issued a warning to employers of labor who have been putting objectionable "help wanted" advertisements in the newspapers. The United States Employment Service doesn't like this form of ad.:

> Highest prevailing wages; plenty of overtime; ten per cent bonus.

It states that such ads. violate the rule against special inducements in advertising. The rules of the service bearing on "help wanted" advertising are as follows:

1. No advertisement for unskilled male workers is permitted to be inserted in any newspaper or other periodical in the State of New York, unless the advertiser has first obtained from the State Director a license or permit. The number of this permit shall be incorporated in all advertisements.

There are two exceptions to this rule: (a) Firms advertising for unskilled male workers under the name of the United States Employment Service shall not be required to have a license number; (b) for the present advertising for laborers for farms, mines and railroads is also excepted.

2. Advertising for all grades of workers above laborers is permitted, provided that such advertising shall not contain mention of wages, or hours, or special inducements. The wording of the advertisements for the more skilled workers shall be confined to a statement of the number of workers wanted, the different grades and occupations, and the place where applicants shall apply.

* * *

Prepare to Bid on Hangars

Contractors should be prepared hereafter to offer bids on hangars, just as they would on ordinary garages. Some weeks ago ground was broken at the Ashburn flying field in Chicago for the hangars to serve as a receiving station for the Chicago-New York aerial mail, and to house the airplanes to be used in the service. With the return of the aerial forces from Europe the airplane will come into greatly increased use in both public and private service.

The Architect and His Education

By CARL F. GOULD, A. A. I. A.*

ARE we not now about to enter a revolutionary period, or moment of protest, in the world's educational history? The term "educated man" does not carry with it the universal approbation it did a few years ago, as we all realize. The educated man as such today, is considered erudite. The erudite person we consider, I believe, one who has an avaricious intellectual fund for information, rather inclined to exhibit it, but when deeds and actions are needed, his interpretation somehow does not apply, and he is discarded for one who has maybe, a crude solution, but nevertheless one that works.

We know ourselves that the well trained man is, generally speaking, capable of handling problems which the public do not give him credit for being able to solve. The consequence was and still is that many jobs which properly should come into an architect's office, go to contract designers and others who have no training or adequate experience. It is the tragedy of the profession. These men, however, are able to get away with it because, even in their crude manner, they make certain, above all, to bring themselves before the public. The public does not today go out of its way to rout out hidden talent. Talent must come forth and make itself evident or go unused.

In order to analyze this problem we will consider three phases of education which may, we hope, throw some light on this more than unfortunate situation. Education of the student, education of the architect and education of the public.

Have we, or our so-called best educated associates, been able to cope with our present-day problem satisfactorily? Has the education of an architect been such, within our experience, or observing that of others, one which has or has not prepared him for the conditions in which he now finds himself—the everyday, workaday world? This, of course, will be answered by each individual according to his interpretation of what is satisfactory. But has the education of the architect had equally successful applicable results, as say, that of the engineer, lawyer, doctor, chemist, etc.?

My answer would be that of all the professions, we have obtained the least apparent success or recognition from the public. If that is so, then the next grave question we must ask, is it the faulty education which we received which has brought our profession so low in public esteem, or have we failed to be instructed in the correct manner in which to exhibit our "wares" to the public, or is there something wrong with the public?

As soon as the human mind becomes conscious of the pleasure an orderly arrangement gives, it then begins to apply order in conscious fashion. The orderly supports must have correspondingly orderly rafter-ends, and these in turn, due entirely to the necessity of construction, give regularity of spacing to all the parts. As wealth and leisure increase in the early civilization, the conscious sense of order becomes so keenly appreciated that the spacing of columns and rafter-ends is looked upon as something worth while per se, and abstract beauty comes into the world as a form of conscious human expression. From that moment civilization begins to weave its marvelous web of abstract form, which has been an expression of its joy in existence ever since. Without beauty of form, what a poor place to live in this world would be! If it were possible to emerge from

* A paper read at the annual meeting of Washington State Chapter, American Institute of Architects. Mr. Gould is a member of the firm of Bebb & Gould, architects, 1005 Securities Building, Seattle, Washington; head of Department of Architecture, University of Washington.

the cave, our schools and our homes, our business blocks would all be of similar story heights, similar openings for light and entrance, there would be no entheses to columns or supports, no sensitive channeling with their varying play of light, no crown mold with their sensitive anthemion ornament, no sculptured tympanum—a world from the beginning to the end of drab uniformity.

If, however, we were to believe the average business man, that unfortunate individual who temporarily occupies life's stage, it would be just such a world that he would drag down upon himself. One of these practical affairs which he is so constantly reiterating, and why, for goodness sake, the architect has not the courage to give him what he wants, or rather, what he says he wants; but no, we always, by indirection, give him more than he thinks he wants in the way of architectural impressiveness, and he goes away proud at heart in the possession of something people tell him is impressive, and that at once reacts upon his self-importance.

Who does not know the enthroned banker, glorying in his marble, bronze and gilt, which, if taken from him would leave him naked indeed?

In face of all difficulties, must we not therefore persist in giving the public what it does not apparently want in the way of architecture and design?

If then we admit, which probably some of you do not, that design still has a function to perform even in spite of the receiving public hostility, let us inspect with care the types of architecture we are endeavoring to impose on this practical era of ours. Let us see how these various types of architecture have been the result of our educational process, and whether or not they adequately fit the modern world apparently industrially made.

Are not the examples of office buildings on every city's thoroughfare, rising story upon story, accentuating the horizontal members, and topped by a huge classic cornice, are they not architectural perverts? We see their great blank side, but are unable ever to appreciate them from the angle of the drafting board design. Again we have in our midst splendid models in red sandstone, of deep revealed medieval architecture, round-arched, trying its very best to squeeze itself into the requirements of the alert office buildings. Perhaps, after all, our dumb business man may have reason to object, and perhaps we are reaping the fruits of the sins of the early practitioner.

They, Hunt, Richardson, and others, obtained their education in foreign lands by travel and a little superficial study in the École des Beaux Arts. They sketched beautifully and saturated their minds with the French Renaissance, the Romanesque and the Palladian classic. They came back to this country during a period in which architecture was at its very lowest ebb—from 1855 when Richard Hunt returned to New York, until perhaps the Chicago World's Fair. They found an architecturally sterile field, and their individual preference for style found no opposition and was imposed broadly in many exceedingly beautiful monuments without discrimination, whether Fifth Avenue residence, bank, club or office building. The conditions of the problem, structural or otherwise, were secondary to the design. The problem was imposed from without, and the conditions of utility were lightly regarded. Every city, from the Atlantic to the Pacific, has examples of work of these men or their followers. The World building in New York gave the suggestion for such buildings as the Pioneer and Burke buildings of Seattle, etc., which it would be impossible for us to conceive as a basis for an evolved type. We must give credit to these men for establishing a high standard of scholarliness in the profession, and raising the architect in

public esteem, but they utterly failed to establish sequence in architectural evolution.

After these men had held sway there appeared on the horizon a younger group, headed by Sullivan of Chicago, which swung to the opposite side of the pendulum, scorned European precedent, and in a vigorous and highly commendable way, endeavored to bring about a solution of the architectural enigma, by solving the problem purely and entirely on the basis of structure and ornamental application without precedent devised on the basis of cross sections of the sea anemone; delighted in ignoring all historic and abstract design previously devised. A wave again coursed through architectural design, of which we find a reflex, in some cases excellent, in other cases totally without merit, such as the Melhorn building and the Moore Theatre, Seattle. Again the sequence of architectural evolution is broken, these designs no longer have weight, although much has been contributed to a more accurate architectural thinking process, that is, the evolution of a design from the conditions and based upon the conditions. The designs of this group of men seem to have failed. As we review the whole history of architecture, we find no individual who has successfully stemmed the current of architectural tendencies. The great men of the past, Pericles, Michael Angelo, Suges, seem to have obtained success only by re-created masterly summaries of the current architectural thinking, and not by going off at tangents of their own individual concoction. Our riot of individualistic architectural expression of modern times which we so deprecate, is due, without question, to the fact that we do not sufficiently react with the public; we are left too much with our own individual interpretation. We need the intelligent reaction of the public to obtain permanent results. The Greek Temple had been slowly evolving for hundreds of years before the perfected Parthenon was built. The thoughts and ideas upon which the great cathedrals were designed and constructed have a miraculously woven sequence through the Romanesque even to the Roman, Louis Sullivan, Frank Lloyd Wright, Richardson, Hunt, all tried and are trying to impose an architecture upon the world, each as different in its fundamental intention as could be, and evolved out of an unsocial and highly individualistic mental concept.

Now what we need is, first of all, more collective thinking, both on the part of the architect and on the part of the public, and until we do think more nearly alike it is doubtful whether we will make progress towards a permanent architecture. I am sure I perceive protest, protest against uniformity—it has been our slogan above all to be original. The public says, build me a house, I don't care what or how, the only condition I make is, it shall have absolutely no semblance to its neighbor's. Any suburban street in any American town is evidence of this fact. An heterogeneous assortment of every period and type, and the whole commonplace, misfit, sterile and terrifying in its ugliness.

Compare the beautiful little town of Broodnay in the Cotswald (or the newer town of Forest Hills). Simple domestic architecture, all Tudor, even those recently built, each expressing individuality and solving the individual problem, but the whole portraying a unity of effect which leaves a permanent impression of charm and domestic friendliness.

As ugly as the Smith building is, if every Second avenue mercantile structure recalled its theme of ugliness, we would have a street famous throughout the United States as portraying distinction in contrast to the conglomerate effects which often in detail are far superior in beauty to the Smith building.

Snyder in New York has devised a school design which he has improved as it has been repeated, but St. Louis and Chicago discard the type because

their architects would be criticized for plagarism if they followed his lead. The poor long suffering school problem is still being distorted by being forced into Romanesque, Art nuvean and every variety of classic design.

The newer education shows tendencies toward a more rational and greater uniformity of method. It does not discard historic precedent; it brings into the foreground the great masterpieces of the past for inspiration; it analyzes them in terms of the then existing conditions, but above all it teaches us to solve our present day problem into terms of practical requirements, conditions of construction, materials, locality and climate. It remains for our educational process to be willing to search out greater universal tendencies and develop our thought in their direction. However much we older men may be able to adjust our thinking process to the newer order, for the newer order is coming as certain as day follows dawn, we can never do so with the agility of the embryonic architect or the student who is now getting his ground work established. Our schools of architecture should be the most fertile preparatory field for the mold in which he eventually must find a nitch. We can only hesitatingly forecast what this mold will be, and prepare imperfectly our courses of instruction for the boys who will enter it.

The two great conflicting points previously expressed, the following of historic precedent with such close servility as to create misfits; or the utter ignoring of precedent and creation of sterile riot of individuality. No architect's education could, we believe, be considered complete without an intelligent understanding of historic styles, without being able to interpret the subtle fineness of the Greek, the sumptuous dignity of the Roman, or the austere aspiring quality of the medievalist. The student's problems will by no means close at this point. He must be taught the processes of analyzing a problem accurately in terms of its conditions; be able to reduce the complex into its component elements, sense the essentials of a problem, place them in their relative order with equal skill, whether the plan of a workman's cottage, an industrial plant or a courthouse. All the while his thoughts must be shot through with an awakened sense of relative truth in form or proportion. This sense of pure beauty to be attained variously by drawing from life, modeling in clay, exercises in color, and by the abstract study of form or esthetics.

In this analysis of instruction we cannot omit the study of mathematics and construction, the necessity of which is well recognized. Just as the figure of a man fully clothed is his flesh and blood, full of action and joy in living is only possible if the bone framework is sound, so a knowledge of the framework of art or structure of its members must be thoroughly attained.

An awakened sense, therefore, must pervade the whole sequence of education and mold into one mind fabric the visions of man's past achievements, the logical methods of rational determination and a knowledge of the laws of structure. This is indeed a big undertaking as a program of education, and one that can only be imperfectly attained. It is possible, however, we believe, to give a direction of mind to the student which will permit him to more nearly complete the process long after leaving the atelier. There no doubt will be many shortcomings among the future generation of architects, but upon the experience of the past, we believe their education, whether in the office or the school, should prepare them better for the greater opportunities, perhaps the most extensive building era the world has ever seen.

Now finally for the architect himself, we men assembled here, what can we do to help our situation? Let us be a little selfish and look to our own self-preservation. For are we not deserving of some recognition for the self-sacrifice we have been putting into the profession? Willing to give more, to put more into service for the public, and be content to receive so little in recompense? Can we not, with propriety, help ourselves to get added returns and joy out of the few chances that still may be coming to us?

Due to the demands upon our sympathies and the necessity of service brought about by the war, the world consciousness has departed from its individualistic isolation; we are now becoming a really united family, not only within our border, but beyond the seas. We are attaining a far greater unity of consciousness.

Architects must take on something of the new enlarged consciousness that has come and is coming to the world. If the practising architect of today can't do it, someone else will. The contractor or engineer will gradually work into being a full fledged practitioner in the newer school. We must, as never before, be alert; we must be prepared to tackle the new problems; we must be prepared to tackle the old problems in a new way. The housing problem, the industrial plant that needs reorganizing and replanning, the farm building. Not only must we be ready to get out our drafting boards with these new problems upon them, but we must be ready to meet the workingman, know him at his local headquarters; we must be ready to meet the overseas shipper and learn his terminal problems; we must go into the country and meet the farmer and become interested with his problems. We can no longer rely so completely upon our architectural plates. We cannot any longer impose upon them problems as previously solved. We must solve their problems on the basis of their own needs, their own ability to pay, and upon the revenue derived.

There are terra cotta plants, wood working plants which need reorganization. We must be willing to inspect them, follow through their special needs and reorganize their plants on the basis of good planning insofar as it interprets their requirements.

The conditions of utility, climate, materials available, all enter into the resolution of the problem, as we know.

The architect is by far the best equipped man today to take over these enlarged problems. But the public does not think so, and does not know or care to know so, and he, the architect, is being sadly ignored and is rarely employed in these undertakings. The new order of things is going to require, unless the world's progress is to cease, the solution of innumerable problems such as these. We, as architects, must attain greater public recognition for our ability. We must do it by standing together, working as a unit. We should not seek to hide our talents. It is neither fair to us nor to them. We owe it to the public to exhibit our wares. We must and should keep them informed through the press of our capacity for service. The medium of recognition has, as we know, vastly changed since our fathers' time, when personal contact was all that was necessary to get recognition. We must not forget that method either, we must meet men as before, though in a larger spirit of friendliness, in the various walks of life. But we should forget our former professional false modesty. At the club, upon the street, in the street car, if the spirit moves us, we should not be ashamed to talk shop to interest a fellow traveler in the subject which is nearest our hearts. You often have to listen respectfully to business men's talks upon business topics, why shouldn't the public listen to us upon our topic, infinitely more interesting than theirs if we take a little pains to

make it so. When our fellows do a good bit of work let us praise it and him openly, and do not confine criticism to adverse comment. Let us for a while at least leave out our adverse comment even upon the most hated rival. Let us see that the press, by persistent effort, will again mention the name of an architect. If it is necessary to take out paid publicity, for heaven's sake let us do it. But above all, let us get into the game in every manner of way that receives the approval of our enlightened conscience. And let us do it in common, with joint action, mutually and with common friendliness.

The greatest opportunities are just ahead. Shall we try to grasp them as a Richardson or a Hunt or a Sullivan, and fail in establishing an architectural sequence? The world will not again stand for it. Our problems are more universal today, and they must be solved in a far more universal fashion.

Individuality must count as never before, but it must be the joint individuality of the men in the profession working together with a far larger consciousness.

* * *

Puffed Brick for Concrete

THE world, and especially the shipping portion thereof, stood flabbergasted when the concrete ship Faith was launched on San Francisco bay and the lie was given to the theory that stone won't float, but the world and the shipping portion thereof, accustomed to accomplishment of the impossible, doesn't know quite what to make of the "puffed brick" vessel which has been "poured" by the San Francisco Shipbuilding Company on Government Island in Oakland inner harbor.

"Puffed brick" is made like ordinary brick of a peculiar clay containing a low percentage of silica. Subjected to intense heat, the brick puffs like popcorn. The product looks like and is as light as coke.

After having been puffed the brick are ground to dust and mixed with cement. This process makes for a gain of about 40 per cent in the lightness of the ship's walls.

The ship's forms are built in standardized sections and hinged with bolts so they can be forced up and put out of the way when the concrete hardens. After launching, these forms can be put back in place, steel rods installed and in a few days the pouring of another ship can be begun. According to experts in concrete shipbuilding, this makes it possible to turn out a 7500-ton vessel every three months. Only about 25 per cent of the lumber in the forms is wasted.

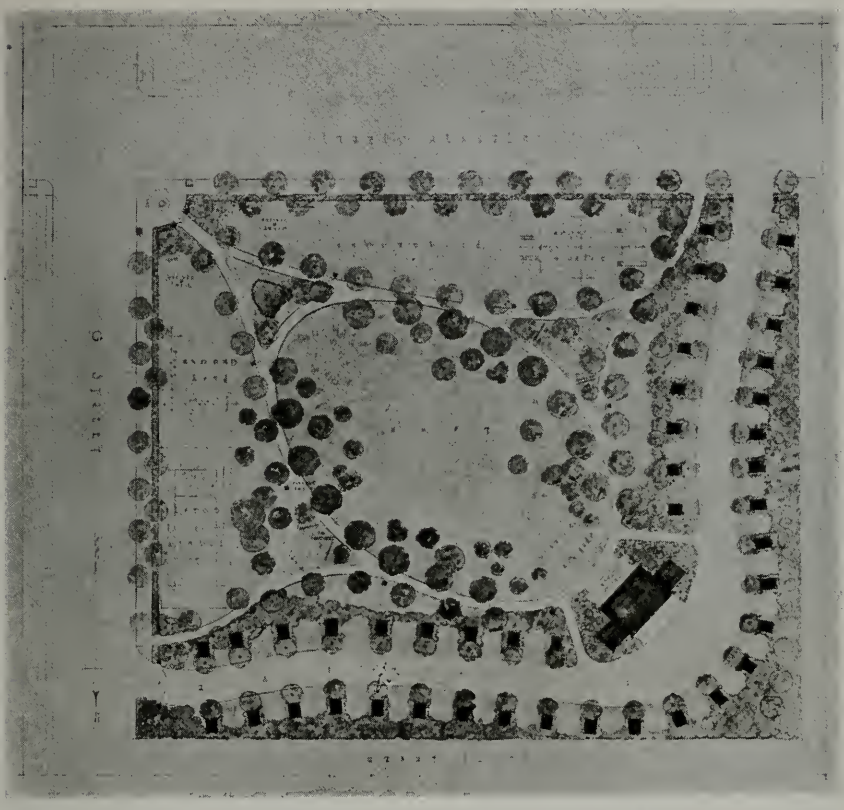
The two concrete ships building on Government Island resemble steel vessels in their lines and show a great advance over the Faith. They will be launched broadside to the water, as it is figured that to send a concrete vessel stern first into the water might subject it to a damaging twisting strain. The ways are three feet above high water, so that the ships will take a three-foot dive when launched. It is figured that this drop when launched sideways subjects the ships to minimum strain by spreading it over a large surface.

* * *

Description Baffled Again

"I don't suppose there are words to describe your new bungalow."

"Yes, there are words—but my wife won't let me use them."



PLAN OF MOTOR PARK FOR MARYSVILLE
John W. Gregg, Landscape Architect

The Automobile Camping Ground—A New Element in Park Design

By PROFESSOR J. W. GREGG, Landscape Architect
University of California

LEADING writers and other authorities on modern municipal development are united in the opinion that no town or city can be considered properly equipped without adequate parking facilities. All agree that parks not only add to the beauty of a community and to the pleasure of living in it, but are exceedingly important factors in developing the health, morality, intelligence and business prosperity of its citizens. Indeed it is not too much to say that a liberal provision of such features is one of the surest manifestations of the intelligence and progressiveness of a community. It is therefore constantly becoming more generally and more clearly realized that every resident of a town or city owes to it, in return for benefits and advantages derived from it, certain duties not specifically compulsory according to law, and that among such duties, too often neglected, is that of aiding in every possible way to make the place more beautiful and more agreeable to live and work in, as well as making it more attractive to strangers.

PERSPECTIVE OF MOTOR PARK FOR MARYSVILLE
John W. Gregg, Landscape Architect

SERVICE HOUSE FOR MOTOR PARK, MARYSVILLE
John W. Gregg, Landscape Architect

The great war has exerted a disquieting effect on many beneficial civic activities the world over, and has to a certain extent interfered with the progress of American municipalities in doing the things that should be done for their citizens. While it is perfectly justifiable during a period of national stress to distinguish between essential and non-essential activities, it is a shortsighted policy which seeks to stop entirely the development of public parks and recreation centers which have so clearly demonstrated their function of conserving the health, the morals, and the fine spirit of cheerfulness and enthusiasm so vital to the welfare of our citizenship. It has been said that "the wrongs against society are committed by our people not in their hours of work, but in their hours of leisure," and the responsibility lies not wholly with the people who perform these unfortunate acts but with the people who have not been wise enough to see to it that the fundamental business of any community at large is to see that it becomes increasingly easy for people to do right and increasingly hard for them to do wrong. What has been accomplished in the past by the development of parks and recreational facilities has been demonstrated on the battlefields of France. It is the great American "playground" with all its lessons of alertness, quickness of thought and action, physical trim and fair, hard play that has so gloriously competed with the German "drill ground" for the supremacy of clean, free thought and right living. It is gratifying to note that many communities have thus far not lost sight of the economic value of parks and recreational areas and are continuing to make it easy for our people to find wholesome, happy and healthful outdoor enjoyment so necessary to the upbuilding of the mental and moral fiber of our citizenship.

From the small level areas providing only an irregular greensward and a miscellaneous tree growth, have been developed the so-called modern park-playgrounds with their numerous features and a more compact, intensive use, all compatible with the increasingly progressive and complex life of the people. Correspondingly, individual local requirements have rapidly broadened to include those of the automobile public where heretofore the designing of the average sized public park has involved the consideration only of those problems and features of direct interest and value to the residents of the community in which it is located.

While many new features or elements, either of utilitarian or aesthetic value in park designs and construction, are constantly demanding consideration, probably one of the latest and quite important is the problem involving the wholesome and friendly entertainment of the automobile traveling public. The automobile has without doubt materially changed many of our business methods as well as those which have heretofore governed our mode of living in general, and like all similar important revolutionary factors, it has introduced numerous problems which must necessarily reach a solution before unity and harmony of thought and action can prevail. As a pleasure vehicle the automobile is serving the very important and desirable function of bringing thousands of people into closer and more intimate contact with the open country. It is calling forth that wander-lust and primitive instinct for camp life so inherent in us as a nation of pioneers. So extensive has become this type of traffic that good roads and hotels are not an absolute necessity for those who wish to penetrate the heretofore strictly rural districts. Good roads, however, as they continue to spread in net-like fashion over the State, are important factors in directing and controlling the bulk of automobile traffic. Because of the large amount of such traffic and the fact that an increasingly large number of people are making a practise of camping en route, the numerous

beauty spots, which were originally located along our highways and which furnished ideal conditions for temporary camps, are fast being destroyed. The "auto pirate" and the "road hog" are one and the same animal, living off the "fat of the land," destroying and rendering insanitary all camping spots which they frequent. Roadside thievery, vandalism, and undesirable sanitary conditions are calling to the attention of towns and cities the necessity and desirability of establishing municipal auto parking areas where proper camping facilities can be furnished and maintained in satisfactory condition. Many municipalities in California are now providing such camping sites and their popularity is evidenced by the heavy demands made upon them. That such features are serving a very desirable purpose is without question.

The introduction of the auto camping feature not only adds a new element to park design but many new problems as well, and California towns and cities are meeting the main problem in three different ways: First, by securing a piece of wooded land near the highway outside of the city proper and permitting free camping privileges. Very often in this case there are no conveniences installed by the city and little or no attention is paid to the maintenance of the area. Sometimes rough board tables and seats are built, water piped to the site, and rough toilet facilities provided. Such areas are of course better than nothing, but as a rule they soon become damaged and misused to such an extent that they soon become unattractive to the better class of tourists. Second, some communities which already possess large or medium sized parks, which may be wholly or partly developed, are setting aside a portion of such parks for camp use, and as a rule providing more and better camping facilities. Because such an area is within the park as a whole, it also receives some care and does not therefore become a seriously objectionable feature. Usually, however, such a camping area is located with no regard for the design of the park as a whole, and is consequently a most conspicuous and obstrusive element. Such a feature, like all others in park design, should appear to fit into the general scheme and become a useful as well as ornamental element. Many cities and towns possess parks with undeveloped spaces where with due regard to the principles of landscape design and the proper functioning of elements, most serviceable and pleasing camp sites may be established. If in attempting to locate such an area the design and uses of the park as a whole are not studied, the auto camping ground will prove a conspicuous and oftentimes disagreeable "after thought." Such camping spaces should be made as attractive as the rest of the park by the use of a reasonable amount of ornamental plantings and the utilization of materials of construction which are similar to those used elsewhere in the park as a whole. Roads and walks should be definitely located, well built and maintained. Proper facilities for cooking should be permanently located in order to prevent campers from building fires wherever their fancy dictates. A good water and sewerage system should be installed and proper bathing and toilet facilities conveniently but not conspicuously located. It is most desirable to extend the lighting system to that portion of the park as well as to install all other features which will in any way aid in making the site convenient, healthy, pleasant and attractive. Third, those communities which up to the present have never possessed a well developed park or playground and which cannot afford to secure a very large piece of land are meeting this auto camping problem by first having detailed landscape plans prepared which can be followed as fast as time and funds permit. Such plans should provide in a systematic and attractive way for all the

features necessary for the health and enjoyment of citizens of the community as well as for those strangers within its gates. If such plans can be prepared in advance of any construction work, all park, playground, and auto camping features can be so arranged as to produce the maximum of service and beauty. The city of Marysville is fortunate in having possessed the foresight to proceed along this line and even a casual study of the plans here presented will convince the most skeptical individual of the value of such a method, for when these plans are carried out, Marysville will possess a park where its citizenship, young and old, can enjoy the cooling shade of beautiful trees, or can gather on the open lawn as an outdoor auditorium and enjoy any kind of entertainment presented from the broad stage-like porch of a beautiful well equipped and centrally located park house. Well built walks will define two spacious playground areas for small children and a proper mass planting of trees and shrubs will give individuality, privacy and charm to the auto camping section which is conveniently accessible from two streets. Here the tired but happy traveler will find his individual parking space by the side of an attractive little shelter house equipped with gas, light and water, as well as table and seats. This well kept street of camp-homes centers on the park house where will be provided showers and other comfort station facilities and a chance to rest by an open fireplace after the day's drive. In such a plan the requirements of "compactness," "utility" and "beauty" have been fulfilled and Marysville will profit greatly thereby.

* * *

Registration Necessary to Save Profession's Entity

THE architectural profession is earnestly urged to take individual and direct action in response to the invitation of the American Institute of Architects to take part in discussing the formation of a law governing the practice of architecture. Only by the adoption of such a law by those state legislatures which have not already made this vital provision in civic economy, can the profession be saved as such, from a situation which approaches disintegration. This situation is already serious. From the "plan-book" purveyor by whom is designed ninety-nine one-hundredths of the "small houses" of the land; or the building companies and large corporations who employ their own "architect" and draftsmen, to the engineer—that even under the stringent and protective Illinois law is allowed to practice architecture in some of its constructive forms —the undermining of the profession as such goes on rapidly and surely. And only a general passage of laws in the several states limiting practice to those who demonstrate their fitness can stop this disintegration. A rush for new constructions that will follow the present cessation in building will still further jeopardize the architect's prestige unless the law demands of all designers and constructors certain evidences of qualification for the work. The public side of the situation is still more serious, for the inadequate plan and lack of design that is inevitable with the unskilled, will depreciate the value of property as well as seriously affect the living and refined surroundings of the public. A legally standardized profession is the only remedy for present and future conditions and should be striven for by every architect who cares for the permanency of his craft.—Western Architect.

* * *

Yate, Australia's hard wood, is the strongest known timber.

GENERAL VIEW SHOWING FULL LENGTH OF MODESTO BRIDGE (1250 feet)
E. H. ANNEAR, COUNTY ENGINEER
LEONARD & DAY, CONSULTING ENGINEERS

Reinforced Concrete Bridges and Their Architectural Treatment

By F. G. ENGHOLM, C. E., in Contract Record*

THE influence of engineering structures upon the community life of people is of great national importance. The standards of beauty are enlarged with the growth of knowledge.

The creation of beautiful structures can only be attained by a full and true knowledge of the kind of materials used and by certain subtle distinctions born of integrity of purpose and refinement in handling them.

The use of masonry for bridges must now be regarded as a thing of the past, chiefly on account of the prohibitive cost. The longest single span in masonry in existence is 295 feet. The rise and dimensions of a masonry arch are necessarily large and are especially noticeable in spans of any appreciable magnitude. And further, the restrictions of site such as clearance and depth of construction, often limit and affect the general design, economy, etc., of the structure so as to render the use of masonry prohibitive in face of modern developments.

The graceful lines of a reinforced concrete arch bridge with a shallow rise and comparatively small dimensions of the various members, give a touch of refinement which cannot be approached in any other material.

In steel structures the aesthetic treatment assumes a different character. To attempt to ornament any steel structures of large span would be entirely false, and foreign to the fundamental principle of their design. Its application, if done at all, could only be carried out consistently by a great increase in weight and sacrifice in economy. In the case of the Forth and the Quebec bridges, for instance, no pretence is made to decorate these structures. They are too collossal in proportion, themselves, to require any such treatment. The designer of the Forth bridge stated that the design pretended nothing but to tell the truth as simply as possible and, inasmuch as it does, it is beautiful.

These massive structures are rare occurences in the history of a country and in dealing with "every-day" structures, reinforced concrete, in its dimensions and applications, gives proportions of beauty all its own.

The steadily increasing use of reinforced concrete as a structural material in the last few years thus opens up a line of thought in its architectural treatment, worthy of the best effort of the artistic as well as the practical mind. Designers, apparently, have not yet realized the structural possibilities of reinforced concrete or else they lack that special knowledge of the material to foster its more prolific use in their works. In a few cases, however, designers, mostly of the younger and more progressive element, are investigating its possibilities.

To confine myself to bridges and their particular architectural treatment in the space of a short article, it is necessary to condense and be brief. At

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* Associated with Francois Hennebique, Paris, and L. G. Mouchel and Partners, London, Eng.

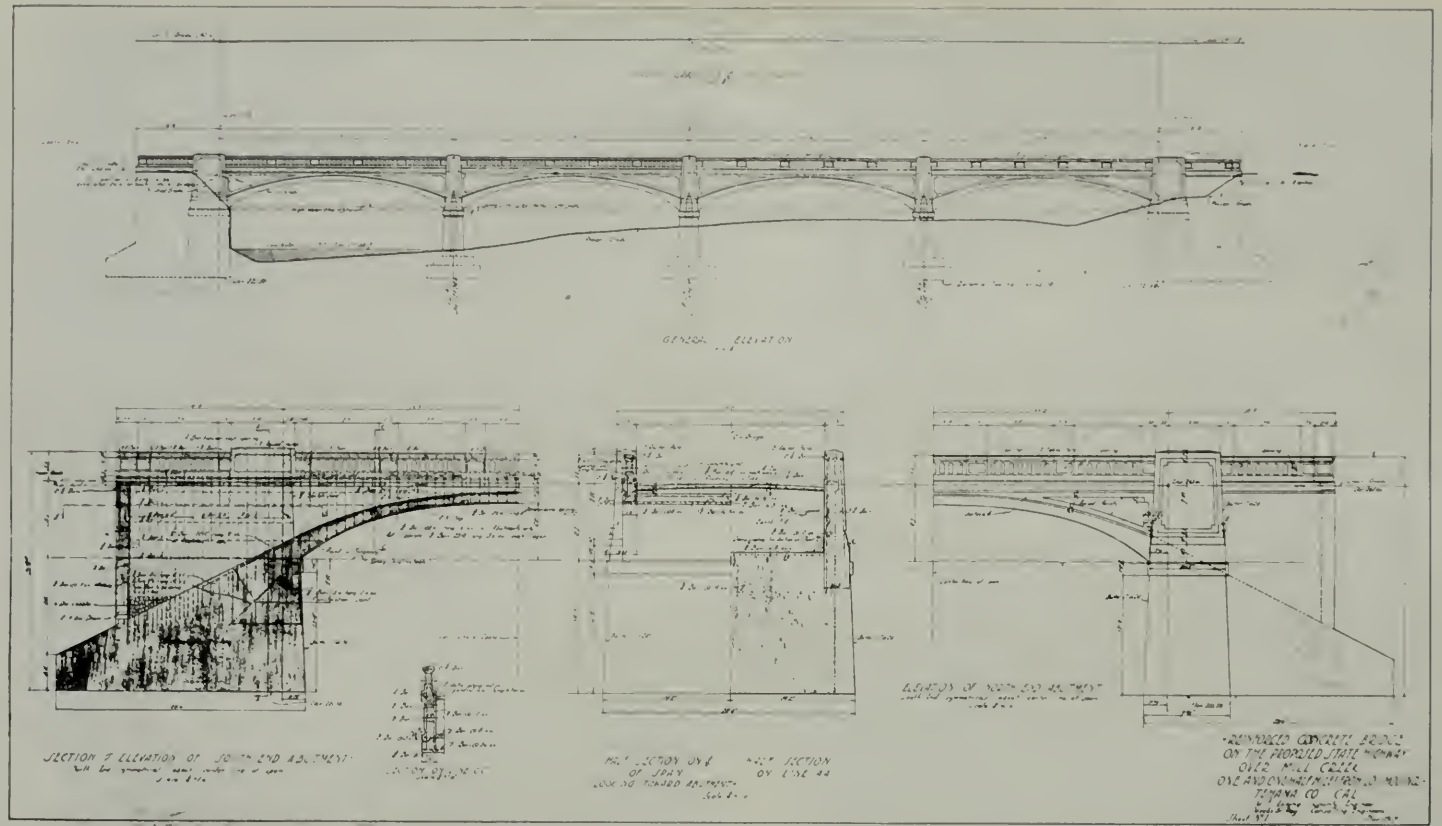
EDITOR'S NOTE.—This paper was submitted to Mr. Will P. Day of Weeks & Day, architects and engineers, Phelan building, San Francisco. Mr. Day pronounced it one of the best articles that has been written in recent years on the subject of reinforced concrete bridge construction. He agrees with the author that reinforced concrete highway bridges would, under practically all conditions, be materially improved if finished in some manner other than with the plain surfaces of ordinary concrete. Too much emphasis cannot be placed on the proper selection of the surface aggregate and the method of finishing. Likewise, the color scheme should be given careful consideration. Highway bridges, whether in cities, villages, or in rural districts, should be so designed that they will harmonize with their environments. Highway engineers, officials and bodies of laymen having supervision of the construction of highway bridges should give this article special attention, should absorb its recommendations, and, thereafter, should emphasize in public intercourse, the salient points so strongly brought out by Mr. Engholm.

The illustrations (the work of Mr. Day) show several different types of concrete bridges built in California in recent years. They are good examples of the author's idea of architecturally treated bridges.

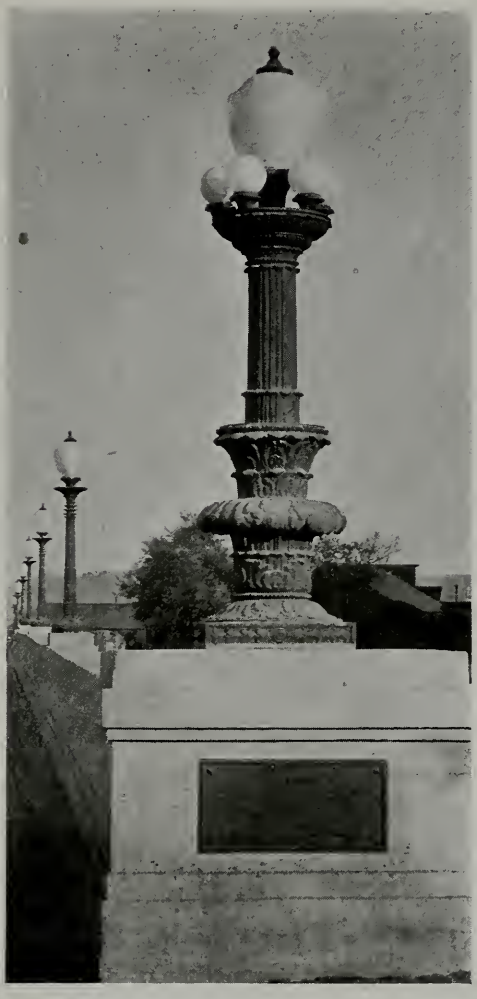
MODESTO BRIDGE OVER TUOLUMNE RIVER
LOOKING TOWARD MODESTO
E. H. ANNEAR, COUNTY ENGINEER
LEONARD & DAY, CONSULTING ENGINEERS

MODESTO BRIDGE, SHOWING RIVER SPANS
(Not arches, but cantilevers)

WATSONVILLE BRIDGE, OVER PAJARO RIVER, WATSONVILLE, CAL.
Leonard & Day, Consulting Engineers


GENERAL ELEVATION
SECTION & ELEVATION OF SOUTH END ABUTMENT
REINFORCED CONCRETE ARCH ON THE PROPOSED STATE HIGHWAY OVER MILL CREEK ONE AND ONE-HALF MILES SOUTH OF RED BLUFF TEHAMA CO CAL

ELEVATION AND DETAIL OF SECTION, REINFORCED CONCRETE BRIDGE, TEHAMA COUNTY, CALIFORNIA
W. F. LORING, COUNTY ENGINEER
WEEKS & DAY, CONSULTING ENGINEERS



ELECTROLIER, WATSONVILLE BRIDGE

the outset, it is well to realize that reinforced concrete is a material that one must have a special, practical and studied knowledge of, to create development along the right lines. No amount of collaboration of architect, artist and engineer, will create a thing of beauty if one and all do not appreciate and thoroughly understand the application of this material.

I am not condemning this collaboration of architects, artists and engineers, so long as the combination working together know the material they are assembling. For instance, take the case of the Bassano dam. Here the combination was not successful. This is a magnificent piece of reinforced concrete engineering, which is surmounted with gate houses designed by the collaborating architect in a half-timber affectation which seems altogether out of keeping with the ponderous structure beneath. The very permanence of reinforced concrete demands that its accessories be permanent also.

The art of building, generally, at the present time, seems to be at a serious crisis; look where we may nothing is seen but a hodge-podge of

PROGRESS VIEW, CANTICRETE BRIDGE OVER SOUTHERN PACIFIC TRACKS, PEYTON, CONTRA COSTA COUNTY.

Leonard & Day, Consulting Engineers

CANTICRETE BRIDGE, PEYTON, CALIFORNIA

Note expansion joint at centre.

Leonard & Day, Consulting Engineers

styles, or rather periods—Oriental freaks and French wedding cakes rub shoulders with English affectations, and only here and there does a structure seem to live and breathe the 20th Century. Reinforced concrete, when universally accepted as the great structural material it is, must, if the designers using it be true to the material and themselves, be the foundation of a great transformation in the mode of building—for the better, we believe—because the elements of concrete construction are so simple. As I have said before, with the elimination of the complexity of construction now in use, we may be confident of the evolution that will take place in the ages to come and be proud to think we were the pioneers of the great thing that will live in the generations hereafter.

We must not, as a few would have us believe, sever ourselves completely from tradition, nor is it right, in my opinion, to take as the heritage of the past merely the trimmings, as seems to be the case with most constructural works, with their burden of cornices, columns, useless porticos and other impedimenta so dear to the heart of the average architect today. Whereas in the preparation of a design in reinforced concrete, the fitness, proportion, and adaptability are the first issues that assail the designer, and the majority of them fail to create anything worth while for the following reasons:

1. Their inability to understand the scientific and working spirit of concrete.
2. The lack of that knowledge to furtherance of thought in terms of concrete, and
3. The impossibility of abandoning the knowledge they have already acquired in building with other materials.

With the perfect knowledge of these first three points a thing of beauty will result, and no amount of elaboration will remedy faults in these first three points. It is absolutely essential in reinforced concrete to keep clear of the changing whims of artistic fashion, and to evade the traditional architectural features in wood, stone and iron. Decoration on reinforced concrete bridges should be used sparingly, and only when the use of such decoration will bring out the beauties of the fundamental principles of design.

Following along this same line of thought, one thinks of some of the great bridges already constructed under the combined thought and work of engineer and architect, and if we accept our previous views we must realize that these structures, though beautiful in themselves, as specimens of studied poetry, fall short of the great idea. For the most part, they embody forms and details which we readily associate with other materials. Cannot the designer think in other terms than the five orders? To me there is only one order—"Fitness."

As a simile might I for a moment be excused a diversion: Take the automobile; the first of these modern means of locomotion were naturally very similar to the carriage, and in some very early drawings, indicating the ideas prevailing at that time, one might find the two personages, coachman and footman of the old staid carriage, mounted up high, in front of the vehicle, and even in some cases, the means of steering was illustrated as a sort of rein attachment in the hands of the coachman. In comparison, look at our modern auto, the acme of engineering perfection, bearing no resemblance to any other vehicle; this upon careful analysis, is found to be purely a matter of elimination and simplification.

Thinking of reinforced concrete bridges in a more intimate way than we have above, several phases of character present themselves, and when we realize the distinctness of concrete from all other materials, we must appreciate the opportunity that knocks at our door for a distinct expression.

BRIDGE OVER PAJARO RIVER, SHOWING CANTILEVERS BEFORE ENCASEMENT WITH CONCRETE.
Leonard & Day, Consulting Engineers

Among these characteristics is the solid purity of line, the mass, the bulk, whatever one cares to apply, should undoubtedly dictate the first steps in a reinforced concrete creation; next, probably, the thought comes of the way in which this material is assembled, i. e., poured. This seems to dictate flowing lines, continuity, and elimination of all the small distractions. A structure designed to comply with these and the other three points previously raised and truthfully dictating its function cannot but lift a new standard to the world to proclaim the progession of the 20th century.

That severe critic of the Building Art, Mr. Ruskin, whether we accept all his statements or not, was right when he said "Nothing is beautiful that first is not true."

I have dwelt above on the error of trying to produce a living structure by using forms associated with other materials, and must indulge the reader's forbearance in repeating this remark, as its importance cannot be too strongly emphasized. There is still a more intimate imitation that must strenuously be avoided, and that is the actual reproduction in concrete of some other material, such as rock-faced ashlar, rusticated stonework; these and many others are a degradation to reinforced concrete and an insult to the material it imitates. To the expert designer the treatment of the finished concrete should open up many new interesting effects. Many of those already in popular use are: the careful selection of a surface aggregate which is then either polished, producing that beautiful effect we know as terrazzo, or by sand blasting the surface marks from the interstices and leaving the aggregate free, producing an effect similar to rough cast. Then again, the aggregate may be varied by the use of either lime stone, granite or marble chips, which might all be combined or used separately at different points of the whole structure without destroying its continuity.

The one great thought that raises itself in connection with the decoration of a reinforced concrete structure is, that it must of necessity be of the structure. This is the argument of the Gothic revivalists in favor of their style, of which there is scarcely an old world example existing that

is not beautiful. The idea of precasting tons of useless features heretofore associated with stone, at present expressed in so many of the concrete structures already built, is in no way significant of progression, and as soon as we forget the cornice as it is at present detailed, and the column of ancient Greeco-Roman times, and give our more strenuous attention to such means of decoration as burnt clay, tile insertion, etc., the more readily will the ground be clear of weeds to begin ploughing through this vortex of existing affectations. At this point, I feel it would be as well to say a few words about the decorative value of iron work. Because a bridge is of reinforced concrete, it would be ridiculous to assign the material to some duty for which it was not functionally the best suited; wrought iron used carefully, and lovingly designed by an appreciative craftsman, will add greatly as an accessory to the general effect. Gates, lamps, and sometimes standards, trolley poles, coats of arms, metal weatherings, inscriptions, if properly designed, lend that touch of contrast so necessary to any work of art. Contrast and harmony are synonymous in the hands of the gifted.

Applying reinforced concrete to bridges, relieves us of one of the greatest obstacles to beautiful structures: the elimination of complexity in constructing a structure whose function is simple; the functional idea should then be the key note of all reinforced concrete bridges. The bigness and, at the same time, the smallness of the function, is such as to simply demand the elimination of trivial details, especially seeing that we cannot comprehend the beauty of a bridge except at a comparatively great distance. The human eye would fail absolutely to appreciate for instance, small heads at intervals on a string course, so it would seem as well to confine any of the smaller elaborations to the roadway itself, such as the decoration of lamp standards, seats, coats of arms, trees, shrubs, etc., etc., where the human eye can readily grasp their significance and enjoy their beauty.

It is readily seen from the foregoing remark that to make a successful project it is not necessary to spend an enormous amount of money. In point of fact, the percentage on the cost of the whole structure can scarcely be appreciated, it is so small. The ease with which these decorations can be effected is also a consideration; the majority of them can be left out without destroying the beauty of a design, and placed at some more appropriate time. Of course, there are still those first three points which should stand, and in themselves create a beautiful bridge, with the other adornments merely as furniture to the home.

In conclusion, I want to touch briefly on the subject which is far from the least important and which as yet I have refrained from talking about until this stage. I refer to color. There seems to be in reinforced concrete a chance that we shall again take up a true heritage, handed down to posterity by the ancients, which, in the last century, has gradually dwindled and waned until our surroundings are as drab as our lives. If we study classical architecture it will be found that our ancestors were partial to building in colors. The excavation of classical buildings at Var Catena, Brioni Grande, and Barbariga, has brought to light many proofs of this. We can understand, to a certain degree, in countries with temperatures such as in England, that color is not so important, but in a continent such as ours, with its brilliant sun and more brilliant snows, color is the greatest note we can strive to incorporate, and so in our bridges and great engineering works, which in so large a number of cases, are built in such close juxtaposition to nature, do not forget that God intended color to be one of the most beautiful notes that human can strike, just as He played it in the supremest creation of all.

Painting As An Asset

Preservation, Beauty, and Sanitation

By DIXY WELLS in Building Management

A GREATER interest in paint and painting is being evidenced each day, and those interested in the merchandising of the decorative idea are selling painting rather than paint.

Of course, building managers, property owners, etc., actually buy cans or barrels of paint or varnish, selecting from the great array of colors shown on the average chart, and buy any old color without definite recommendations for service, and as a rule purchase at the lowest price—or perhaps some advertising has made a definite mental impression which predisposes the buyer in favor of certain trade-mark materials, but there is much more to painting than there is to paint.

Paint is merely a means to an end. The end is definite and constructive, and when properly applied saves millions of dollars, eases the nerves, protects the eyes and generally builds up the health of those who live within the painted walls.

A good paint salesman will sell the painting idea, will sell the service and the advantages which proper paint supplies. There is a definite distinction, you will see. Proper painting, varnishing, enameling, etc., will help to keep your tenants healthy.

Proper finishes, furthermore, preserve wood. Tests have shown that a floor which has been properly varnished from time to time lasts six and one-half times as long as flooring which is left unprotected. The same applies to the trim in buildings. You know how it is if a bit of plaster is chipped out, and it does not receive proper attention, soon the cracks lengthen and spread. Before long a big piece of the plaster falls down, entailing expense which could have been avoided.

You know the old saying, "A stitch in time saves nine."

Rents can be substantially increased if rooms are properly decorated. Select a house, for instance, which is shabby and unkept and try to find a buyer. After an investigation people will refuse to buy—they are not sold through the sense of sight—they see the old, run-down place and refuse to purchase. Let this house be properly painted, the yard cleaned up, interior walls papered or calcimined, floors gone over, etc., and thousands of dollars can be added to the sale price, a figure gained entirely out of proportion to the small expense of painting and decorating.

It is the same with building managers, who sell largely through this sense of sight. Convenience of arrangement, location, etc., are important factors, but the first impression has a powerful effect. A prospective tenant, run down at the heel, with clothes out of press, soiled linen and battered hat would undoubtedly be turned down by the manager of a first-class building merely on appearances, and the first impression is that he would not be a desirable tenant.

Tenants purchase space much on the same basis.

The best paints in these days have a sanitary feature which is not to be overlooked. There are certain wall finishes which contain an odorless disinfectant which is death to the average germ—that is, if they are stirred up in the dust or are in the air they immediately die upon coming in contact with the wall finish.

There are certain varnishes, gloss enamels, etc., tending to shed the dirt, and are easily washed. This factor is an aid in keeping rooms in a sanitary condition. One may enter a building and at first glance consider it clean and

sanitary. But a little cleaner applied to a door reveals dirt and dust—both unsanitary.

It is well, therefore, to use finishes which can be easily cleaned. This saves the recurrent expense of frequent redecorating and gives a periodical freshness to offices.

In these days when soft coal is being burned in many cities, the windows in office buildings must be raised frequently for air; dust and dirt in quantity are carried in, and it is practically impossible to keep rooms clean at all times. However, proper paint and an adequate system of cleaning will greatly help.

The "looks" of a building is important because, as mentioned above, it makes its first and strongest appeal through the sense of sight, and practically everything is sold through the five senses—the sense of taste, smell, touch, sight, hearing—each one applying in a greater or less degree in accordance with the article in question.

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This Is What the War Did to the City National Bank Building of Omaha

AS FAST as the manager was able to raise rents the Government closed up railroad freight and ticket offices and called tenants to the army and navy, writes Mr. Edwin S. Jewell, manager of the building in "Building Management."

The gross income in 1916 was $1.39 per square foot.
The gross income in 1918 was $1.39 per square foot.

It boosted the cost of wages and materials in the janitor department about a cent and one-half for every square foot of rentable area (ground floor and basement included).

Cost of janitor service in 1916 was $0.144 per square foot.
Cost of janitor service in 1918 was $0.158 per square foot.

It boosted the cost of wages and fuel in the engineering and heating department about five cents for every square foot of rentable area. The fact is, coal cost twice as much in 1918 as it did in 1916.

Cost of engineering department in 1916 was $0.092 per square foot.
Cost of engineering department in 1918 was $0.142 per square foot.

The tax collectors took nibbles out of the income amounting to an increase of three and two-tenths cents for every square foot of rentable area.

Taxes and insurance in 1916 were $0.183 per square foot.
Taxes and insurance in 1918 were $0.215 per square foot.

The expense in 1918 was ten cents per square foot of rentable area more than it was in 1916, and the net income per square foot was, as a consequence, ten cents per square foot less in 1918 than it was in 1916.

Total expense in 1916 was $0.682 per square foot.
Total expense in 1918 was $0.783 per square foot.
Net income in 1916 was $0.705 per square foot.
Net income in 1918 was $0.604 per square foot.

In 1916 $49.30 of each $100 gross income was sufficient to meet all expenses.

In 1918 it required $56.60 of each $100 gross income to meet expenses.

The City National Bank Building of Omaha is in disgrace for the first time. After setting aside a reasonable amount to provide for depreciation and obsolescence, the records show a loss for the year 1918.

Employment of Wood in Wet Concrete

UNLESS special attention is exercised, any such proposition as the insertion of wood in wet concrete for the purpose of fixing-blocks, etc., for securing fittings, and various other requirements seems doomed to failure," writes a correspondent of The Carpenter and Builder of London. "Such a method is outside the bounds of practicability on account of the expansion due to moisture absorbed by the woodwork from the wet concrete, the effect of which is invariably to cause serious fractures to occur in the concrete. The writer has in mind an important public work where it was necessary to make holes in the top of a concrete wall to receive later some cast-iron standards. Upon inspection he found that square wood box-moulds made of one-inch board had been inserted in the wet concrete for the purpose of forming the necessary standard holes. In every case the moulds had expanded to such an extent as to have considerably damaged the stability of the concrete by fracture where strength was most essential.

"This led the writer to make investigation and experiments, which led to rather interesting results.

"Two wooden fixing blocks were made; one was painted with two heavy coats of paint with a view to making it impervious to moisture; the other was thoroughly soaked in water with the idea of causing the expansion to be complete before placing it in the concrete. Each block was then placed in two equal sized blocks of concrete in moulds and allowed to set and dry. Very soon, however, results were apparent. The painted wood block had, in spite of the paint, swollen and caused very bad cracks to appear in the concrete, while the other wood block that has been impregnated with the water before going into the wet concrete showed no signs of fracture whatever to the concrete. The shrinkage when dry was immaterial, and made no detriment to the holding propensity of the block, which, by the way, was dovetailed in form."

From the foregoing it appears obvious that quite safe and useful employment of timber in concrete may be made if these simple principles are followed out and adhered to. The aim, therefore, is to expand the timber before surrounding it with the wet concrete, to such an extent that the moisture from the concrete has been forestalled, so to speak, in this process of immersion in water. The wood can never again be subjected to more moisture when the concrete has set. Care must of course be taken that the wood is brought direct from the water and not allowed to half dry before imbedding.

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Not Everyone Can Remodel

It is almost an axiom that any architect can build a house, but not everyone can remodel and restore, says House and Garden, because restoration places upon both the architect and the owner the singular heritage of the past. That is why remodeling and restoration are a pleasant byway of architecture—a path off the beaten track that can be taken leisurely and is abundant with possibilities.

The Restored Tower of the New York City Hall

NEW YORK CITY HALL, SHOWING RESTORED TOWER
Grosvenor A. Atterbury, Architect

LIKE many another public building, the New York City Hall has in the hundred years or so since it was completed undergone (suffered is probably a better word) many alterations as to its interior arrangements and decorations. The exterior, on the other hand, has until the destruction of the tower by fire, been very little changed except by the passage of the years. The burning of the tower might easily have proved a great misfortune even though the course of the fire was checked before any damage had been done to the building itself. Restorations of this sort are of so delicate a nature that the results are too frequently failures in every sense of the word. In this case, however, even the architect of the original building, Mr. John McComb, Jr., could find no fault. Some critics there are who insist that the restoration improves upon the original design in that the tower as first built was clearly not intended to carry the clock so familiar to this generation and which public sentiment insisted should be replaced in the new design. The new tower as conceived by Mr. Grosvenor Atterbury differs to the casual eye very little from the original except for this feature. Mr. Atterbury's design follows very closely the lines of the McComb tower and the general harmony of the building has been preserved intact. The new clock is of the usual tower type arranged to strike the hours and to show the time on four ground glass dials illuminated at night. The dials were carefully designed to conform with the general architecture.

In this time of rapid construction, it is interesting to find that the City Hall was ten years under construction, and during that time the architect received the sum of $6 per day for his services, which were most painstaking and conscientious. The cost of the building was estimated by Mr McComb to be $200,000, but the committee of the Common Council considered this too low and raised the estimate to $250,000. Whether it was actually erected for this sum we are not informed. It was a vast amount of money for the times, and New York City felt itself poor. Probably, however, its credit was as good if not better than at present. At any rate, the Common Council entered upon this undertaking with a caution that must fill our present day authorities with amazement.—Architecture and Building.

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As Promised

"That builder said he would build us acracking good six-room stucco house for eighteen hundred dollars."

"Well, did he?"

"Yes, it's cracking good already."—Building Age.

FIRE HOUSE FOR SPERRY FLOUR COMPANY, STOCKTON
Joseph Losekann, Architect.

Unique Fire House Built by Private Corporation

UNIQUE in appearance and representing the last word in modern construction methods, the new Sperry fire-engine-house in Stockton has been completed, as shown in the accompanying photograph. In conformity with a happy inspiration of Mr. E. J. Luke, manager of the company, the building was designed as a facsimile of the Sperry trade-mark, carrying the slogan "In Every Home."

The exterior of the building is of fireproof construction. The walls are of thirteen-inch brick and eight-inch hollow tile, finished on the exterior with cement stucco, painted white with liquid cement. All columns and beams are of reinforced concrete. All ornamental cornice work and other trimmings are of galvanized iron. The entire building is roofed with a fireproof asbestos slate shingle in two colors, red and gray. The words "In Every Home" are of black mosaic tile set in cement.

The engine stand-room is 21 feet by 55 feet, and extends the entire length of the building, with front and rear yard entrances. In addition, there are a storeroom with lockers, drawers, etc.; workroom, with workbench and lockers; locker or change-room, with ventilated lockers, washbasin, hopper, also toilet and shower in separate compartments with tile floor and walls. A dry-room connects with this change-room for the drying of wet clothes. Also on the ground floor is the living-room, 12 feet by 17 feet, with oak floor, paneled and plastered walls and ceiling. This room contains a large fireplace and bookcases. The woodwork is finished in old ivory enamel, with wall-paper and ceiling tint to match. The kitchenette, 7½ feet by 12 feet, finished in white enamel, contains a sink with "Vitrolite" white drain boards and back, lockers, bins, etc., complete with all conveniences.

On the second floor is a large dormitory in the front of the building, 23 feet by 35 feet, with oak floor, plastered walls and ceiling, finished in washable wall tint. This room also contains two large closets and a private lavatory, with tile floor and walls, for the use of the captain. The lavatory and wash-room on this floor are finished elaborately and in the very newest manner. These rooms contain lockers, wash-basins, built-in porcelain bath-tub, shower and toilet. The walls and floor are of tile and all partitions are of marble.

The building is wired completely in metal conduit for electric lights and fire-alarm system, red lights being installed in all fixtures to light when an alarm is sounded.

The building is piped for cold and instantaneous hot-water service, and heated with individual gas-radiators in every room. The engine stand-room has a gasoline pump and storage tank.

The lot and building have been presented to the city of Stockton as a gift from the company. Mr. Joseph Losekann, of Stockton, was the architect.

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Reinforced Concrete Resists Earthquake

SOME months ago there was published in this magazine a letter from White Bros.' Porto Rican representatives, describing the great earthquake there and calling attention to the resistance of reinforced concrete to severe earth stresses. Further confirmation of these facts is given in an interesting article in Modern Building, by Mr. E. K. Burton, who says:

"The results of this earthquake offer still further proof that reinforced concrete construction is superior to any other type in resisting such phenomena. There are numerous cases throughout the island of modern reinforced concrete buildings which have not been damaged in the slightest, yet brick masonry buildings on all sides are destroyed. This is specially true of the convent and school of the Redemptorist Fathers Order, the High School and College of Agriculture buildings located in Mayaguez—all of the most modern reinforced concrete construction. No damage has occurred to these buildings, yet in their immediate vicinity are the old cathedral, Centro Espanol, Ayuntamiento and many other brick structures in ruins. In the vicinity of Ponce, where considerable damage was also done, the reinforced concrete structures are intact. At Central Mercedita, near Ponce, are reinforced concrete elevator shafts 40 feet in height, with thin walls and less than three feet in width, built in a form to be most susceptible to earthquakes, yet no damage whatever has resulted.

"Results of these quakes have further shown the fallacy of designing concrete structures without properly reinforcing the walls. A large tobacco factory in Mayaguez, constructed of concrete walls unreinforced, collapsed, killing about 25 persons. In the town of Cayey, where a new wireless station is being erected, one of the concrete structures, with walls 12 inches to 14 inches in thickness but not reinforced, was cracked so severely that it was found necessary to construct a six-inch reinforced concrete wall inside the present building and tied to the present walls by steel dowels and bands. This building was constructed by a reliable contracting company and the quality of the concrete is of the best. However, there is no question that the building would have successfully withstood the shocks had the walls been reinforced."

Relative Merits of Engineers and Architects As Planners

IF THERE is one field in which the architect is supreme, and has no equal in anything that appertains to building construction, it is planning. Above all else the architect is the world's expert in the economical correlating of areas and the subtle co-ordination of the functions of a building, whether it be a home, office building, church or the biggest warehouse or factory.

It is from this standpoint, therefore, that the architect very often views some great engineering project which embodies great buildings or floor areas as an architectural problem. If it is not strictly an architectural problem, no more then is it strictly an engineering one. The architect may be lost in the engineering research and problems involved would not dare attempt their solution, yet the engineer nevertheless dares to plan to do that for which by schooling, training and mental bias he is incapable of, and that is to plan areas. Occasionally will be found an engineer who also is a planner, just as at times an architect will be found who in addition is gifted with the engineering sense.

The problems of planning are not problems of construction at all; but the architect soon learns to plan with a subconscious sense of correct construction. That is, his plans involve no constructional absurdities, and in any case construction is readily adapted to plan. But not so the engineer. He is an able constructor and methodizer. He has, in the best type, far vision and cool judgment. He claims to assume nothing! But he does assume one thing, and that is, that he knows how to plan! Engineering planning of buildings is deficient because the engineer thinks more of construction than he does of plan. His business, (aside from research and creative engineering) is primarily one that has to do more with stresses and strains, thrust and counter-thrust, expansion and loads, than with economy or beauty in plan.

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The engineer constructs and then plans to fit this construction. The architect plans first; and the result often is a distinct saving because plan ought always to precede construction. By this is meant planning in its best sense—the skeleton layout and the intensive planning to use every foot of space, adapting each area to its specific purpose; adjusting its size, its cost, its location, its lighting, its mechanical facilities to the specific function it is purposed to perform; giving no more or less than is necessary. Whereas the engineer plans with broad sweeps, like the artist working in charcoal, and his plans are very much like the artist's charcoal sketch—a mere blocking in, and then the building is built in this unstudied form. We speak of this as a general rule. There are exceptions. The great cotton warehouses and terminal, and the public grain elevator both in New Orleans, and both engineering works, are among the most highly co-ordinated structures in that city. These buildings may be likened to well-designed machines, for they are that and nothing less—the ratio of areas to mechanical equipment, the relation of one area to another, all exhibit a correct balance that is architectural in its spirit.

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These exceptions merely emphasize the rule, however; and on large projects, if engineers will but concede the special value of architects in the sphere of planning and form an association with competent men on large

engineering projects of this kind, the final result will be a better piece of engineering. The old, mistaken idea that architects are good only to "make things look pretty" must be discarded. Above all else the modern architect is a planner and in this he can never be approached by men who are untrained in, and inexperienced in the problems and niceties that good planning involves.

We see here a better common ground for engineer and architect to meet upon than any other, and from such an understanding of each other's value there can develop nothing but mutual good to each profession, the furtherance of engineering, and the employment by architects of their special ability upon works that at first glance seem foreign to architecture but which in the light here shown proves itself to be simply a proper extension of the architect's work and a legitimate use of the architect by the engineer; just as the architect calls in the engineer to solve his own—the architect's—structural and mechanical problems.

The engineer is indispensable to the architect as a specialist in a field which the architect sensibly realizes is not his own except indirectly, and no less is the architect indispensable to the engineer in a field that, likewise, the engineer should realize is not his own except indirectly—the field of planning.—Building Review, New Orleans.

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Concrete Walls Shot With Cement Gun

ABOUT 40,000 square feet of two-inch concrete wall were shot with a cement gun on three wooden mine buildings at Victor, Colo. The workers used both swinging and stationary scaffolds, and maintained a daily average of 750 square feet with one gun.

After the buildings had been stripped to the bare frames there was nailed to them triangular wire mesh in rolls 50 inches wide by 150 feet long. On the outside of the wire were placed unit forms 3 feet wide by 16 feet long, consisting of three horizontal layers of wall sections made of 2x4-inch pieces, nailed to one another and to the framework and wired at the top to the studding. Forms were backed by 3-8 inch cedar lagging, and were removed 12 to 24 hours after concrete was shot.

The 1:3½ concrete was first shot from the inside of the forms for a thickness of 1½ inch, air being applied at the rate of about 175 cubic feet per minute, with a pressure on the gun of 45 lb. and water pressure at 60 lb. Forms were then removed and the concrete shot from the outside to a final thickness of 2 inches. The concrete was drawn into the gun from a hopper into which it had been shoveled after being turned once and thrown over a 3-8-inch screen. The best results were obtained by shooting directly at right angles. It was estimated that 7 to 35 per cent of concrete that fell as rebound was taken up and shot again. After application the concrete was wetted several times in the course of two or three days, and that which was already in place was thoroughly washed before receiving the final layer. —Contracting.

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The Santa Barbara Court House Competition

The date for submitting plans for the Santa Barbara Court House competition has again been extended, this time until July 5th.

Economies in Concrete Construction

By C. F. CRAMER,
Superintendent of Construction, U. S. Treasury Department

THE U. S. Patent Office has recently allowed an invention which may revolutionize the construction of reinforced concrete floors, roofs, steps, etc. The invention is the culmination of thirty-five years' architectural experience, of which twenty years has been spent as director of construction, involving extensive use of concrete and formings, for the Treasury Department. All the expensive preparations, delays and obstructions now being suffered in such work, are obviated in the following manner:

The bearing supports as the permanent walls, partitions, columns and girders being in place, floor, roofs and steps are laid in small interlocking units, which are parallelopiped in form and in full span lengths.

The units are of light weight concrete in sheet metal sheaths, reinforced with rods or fabrics of strength desired.

The units may be placed by unskilled labor, each piece being laid before the layer much as logs are laid in a corduroy road, when so laid the units are immediately ready for use, to walk over and work upon.

Floors, steps, roofs, etc., may be laid in any kind of weather or temperature without detriment to the work and without the usual waiting for wet concrete to harden and season. The cost of protecting such concrete work under the old methods is entirely eliminated.

The logs are secured in place by iron anchors at both ends, the reinforcing rods being extended, lapping or hooking as desired. Where fabric is used for reinforcement, the iron anchors are cast into the concrete unit.

Steps are run together by filling the trough-like interlocking groove with cement.

The units are to be standardized "ready-made" in shop, there tested to guarantee, scientifically cared for till seasoned and then stored ready for delivery.

It is proposed that shops and agencies be established in districts, from which finished slabs are shipped comparatively small distances to the job, insuring minimum freight costs.

The units are provided with holes where desired, for pipe, wires, lighting fixtures, line shafting, fasteners, etc., etc. Wood nailing strips are inlaid in the slab if desired. Pipe space in floors are afforded by cross furring. The work is designed so that it cannot be laid wrong. It is therefore "fool-proof."

The comfort of owner and contractor of hurried and delay penalty contracts is imagined when the building is ready to place floors, roofs, steps, etc., to have the complete "ready-made" units at the job ready to place; they will probably be elated also that there will be no wood forms, chuting towers, runways or protections to build, maintain or remove.

No tamping.

No testing.

No riveting, bolting, nailing or screwing. No delays or obstructions to other branches or tradesmen.

Saving all costs of labor, material and time, the foregoing eliminations would entail.

Making Electric Light and Power from Italy's Waterfalls

AN AMERICAN motoring over the wonderful roads of Italy admiring the matchless scenery is so used in his own country to a wealth of electric light that he takes as "a matter of course" the illumination of the streets of the cities and villages and even the country roads. It does not occur to him that in his own America the electric light is more often than not manufactured by use of coal, while in Italy perhaps the beautiful waterfall or dashing mountain stream he admires is, in some hidden glen, manufacturing the lights that line his way, or if he takes the railroad instead of a motor, is furnished the current that propels his vehicle.

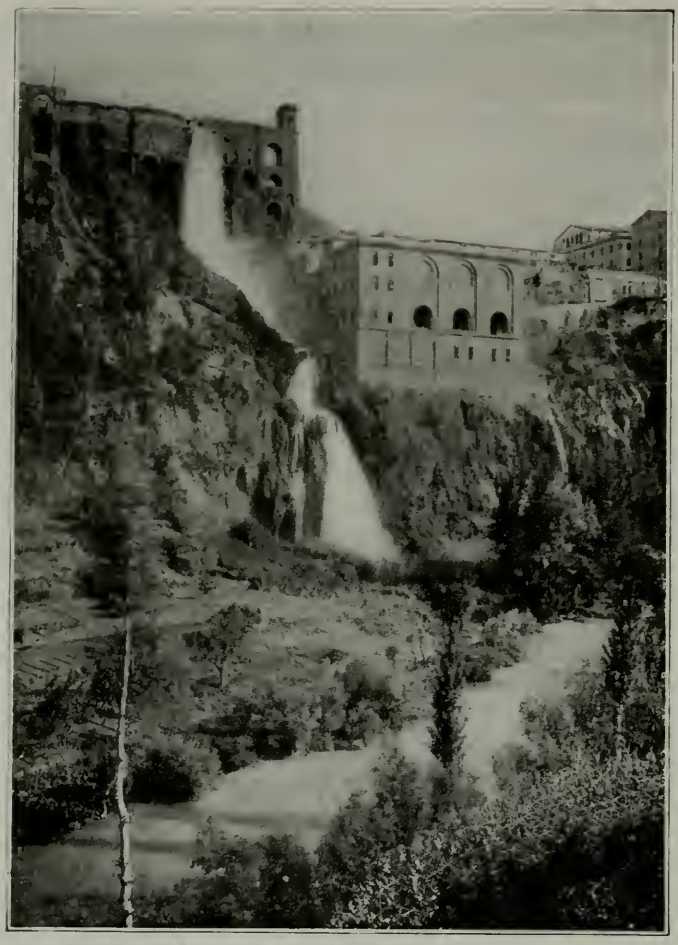
The real beginning of the application of electricity as an industry in Italy was marked by the establishment of the plant of the Anglo-Rome Society of Tivoli, for the lighting of the city of Rome in 1892. Since that time the progress has been marked. Plants have sprung up almost like magic in various parts of the kingdom. Railroads that formerly operated by steam power now are electrified at a consequent lessening of expense and independence, as Italy had to import all coal. Industries that formerly operated by steam power are now utilizing the immense water power facilities of their own mountain streams.

To quote from one of Italy's scientific writers: "There are now over forty different concerns in Italy operating Hydro-electric plants. Some of these companies have a capital of 65,000,000 lire while smaller ones even as low as 5,000,000 lire; their generating capacity is from 100,000 h. p., of which there are several, while others have from 50,000 to 75,000 h. p., some of the smaller ones developing 25,000."

Ready response of capital favored by liberal legislation has made great development possible, with plants comparing favorably with the largest of the kind abroad, and the unitary cost constantly growing cheaper. Electric energy in Italy promised such splendid returns and bid fair from the beginning to be such an important part of Italy's economic and commercial life that the Germans secured a strong hold upon it, but at the outbreak of the war the Italian Government, alive to the danger from that source not only broke the German hold but has taken up an active water-power policy. Thus many sections of Italy that before seemed hopeless of development in an industrial way are now destined to become very prosperous.

This transformation has been accomplished without interfering with or marring the landscape. In driving through the valley of the Roja, from Tenda to Ventimiglia, the traveler sees the plants supplying the energy to most of the Italian Riviera and to the San Giuseppe railroad. Passing through the Majra Valley he sees before him some of the most important electric power plants of Europe, supplying energy for operating the Mount Cenis railway. In each of these he has vivid evidence of the phenomena of a wilderness of natural beauty, turning its beautiful streams and waterfalls into useful industry and wealth without marring the wonderful vistas for which it is noted.

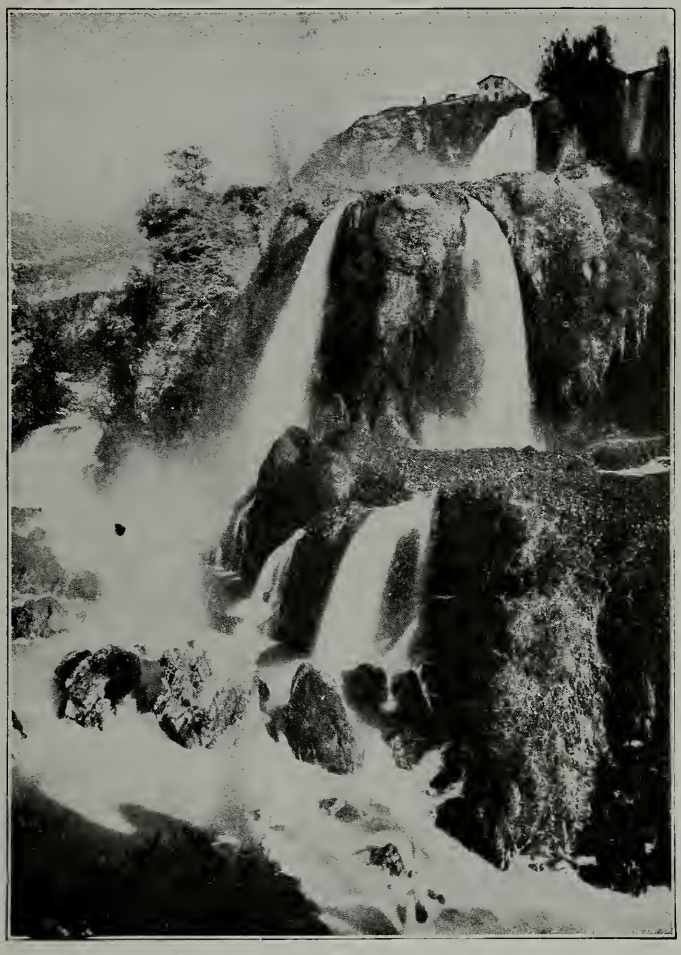
While the natural resources of Italy greatly favored development of its hydro-electric possibilities yet they lay dormant for many years. As far back as 1847 Richard Cobden, while visiting in Rome and discussing her disadvantages from lack of coal, answered D'Azeglio's query—"What can Italy do without coal?" by waving a hand to the clouds in the sky and saying, "There is your steam." By this answer the great Cobden foreshadowed the wonderful possibilities for Italy in development of her water power.



THE POWER PLANT THAT FURNISHES THE ELECTRIC LIGHT AND POWER FOR THE CITY OF ROME AND ITS ENVIRONS.

The development of these natural resources received great impetus from the inventions of famous Italian scientists such as Galvani, Volta, Pacinotti, who invented the electro-magnetic machine, the forerunner of the dynamo, and Galileo Ferraris, who discovered the rotary magnetic field. But perhaps with all due credit to these great names in the field of hydro-electric development and applied electricity it may be stated that the necessities of war has done even more to stimulate the industry in Italy than any other one thing. The enormous demands for power in the industries devoted to manufacture of guns, munitions, and the various machines and instruments necessary to the successful prosecution of the war, forced, through a lack of coal, the development of Italy's enormous resources of water power.

The railroads in Italy are gradually undergoing electrification, and with this development also is coming steadily the question of municipal and state control of this important utility. And so out of her enormous war sacrifices and endeavors to meet unheard of conditions and conquer an enemy that seemed to have everything that nature could supply and hand of man could devise, Italy has brought into active development a new force to help her take her place as one of the foremost industrial nations of the world.



LA CASCATTELLE DI TIVOLI, THE BEAUTIFUL WATERFALLS OF THE STREAM THAT FURNISHES ELECTRIC LIGHTS FOR THE CITY OF ROME. THE FAMOUS HOTEL SERENS IS SEEN AT HEAD OF THE FALLS.

"The afterwar period will witness development of domestic workshop labor in preference to factory work, an evolution especially welcome to the war mutilated," says Guido Ressata, the well known Italian economic writer, "this evolution is made possible," he said, "by the easier manner in which electric energy can be distributed in comparison to steam, and will further promote the electrification of Italy. In the south especially, it will be identified with the irrigation necessary to more intensified agriculture."

Since the war the Italian Government has taken effective measures to prevent monopoly, through priority claims, of the hydraulic energies of the country. This industry has stimulated an important domestic manufacture of electrical machinery, employing many thousands of people at the present time, in turning out high class machines which find a market all over the world. There is still, however, a wide field offering a great opportunity in Italy for the American manufacturer of electrical machinery, especially so as the German competition of the pre-war period is now entirely eliminated.

Architectural Ethics

THE following code of ethics was adopted recently by the Federal Council of the Australian Institutes of Architects, and is now being considered by the various State Institutes:

Clause 1. No member shall enter into partnership, in any form or degree, with any builder or contractor.

Clause 2. A member having any ownership or beneficiary interest in any building material, device, or invention proposed to be used on work for which he is architect, shall inform his employer of the fact of such ownership.

Clause 3. No member shall be a party to a building contract except as "architect" or "proprietor."

Clause 4. No member should guarantee an estimate or contract by personal bond.

Clause 5. It is unprofessional to advertise other than when changing address, and then for not more than six insertions, in any particular paper, giving name, address, profession, office hours, and special branch of practice if desired.

The Institute does not object to members exhibiting the name and address of architect on a building in course of erection, providing that space occupied by name and address does not exceed five feet super.

Clause 6. It is unprofessional to solicit work or attempt to supplant an architect, after definite steps have been taken towards his employment.

Clause 7. It is unprofessional for a member to criticise in the public prints the professional conduct or work of another member, except over his own name, or under the authority of a professional journal.

Clause 8. It is unprofessional to furnish designs in competition for private or public work, unless for proper compensation, or to take part in any competition as to which the Council have declared by resolution that members shall not take part, because the conditions are not in accordance with the published "Suggestions for the conduct of Architectural Competitions," prepared by the Federal Council of the Australian Institutes of Architects.

Clause 9. No member should submit drawings, except as an original contribution in any duly instituted competition, or attempt to secure work for which such a competition remains undecided.

Clause 10. The scale of professional charges prepared by the Federal Council of the Australian Institutes of Architects, and adopted by the Institutes, represents minimum rates for competent service.

Clause 11. No member shall compete in amount of commission or offer to work for less than the scale of charges provided in Clause 10.

Clause 12. It is unprofessional to practice with an architect who has been expelled from, or who is not a member of a recognized Institute of Architects.

Clause 13. Members are not permitted to accept any trade or other discounts or give or accept any illicit or surreptitious commissions or emoluments in connection with any works the execution of which they may be engaged to superintend, or on which they may be employed in any capacity.

Clause 14. A member should so conduct his practice as to forward the cause of professional education and render all possible help to juniors, draughtsmen and students.

Why Building is Slack

WHAT is holding back building and construction work?

More than five hundred opinions on this question have been received in the last few weeks by the Information and Education Service of the U. S. Department of Labor. Many building authorities blame Congress, others charge the financial interests of the country with responsibility. In the Central West, freight rates are said to be exerting an injurious influence. In the main, high costs of materials are held to be the chief obstacle.

"Don't expect private capital to build merely for the sake of furnishing jobs for workmen," writes a well known architect from Buffalo. "That is the obligation of the Government, be it local, State or National. Let public works be started at once for the benefit of the public. The cost will be high and the public will have to pay the price, but the public will reap the benefit in the reduction of unemployment, the absorption of the products of many industries and the use of many works of which there is great need."

From Passaic, N. J., comes the following statement: "I am greatly hindered in progress of this work by not being able to procure loans by way of mortgage, in large amounts, say, in the neighborhood of $150,000. The banking institutions and mortgage companies are making only small loans around here and, even where there is ample security, will not consider investing a large amount of money in one place."

Labor conditions and demands are held to be unfavorable to immediate building operations by many of the authorities writing to the Information and Education Service. An architect, writing from Lincoln, Neb., makes the following statement, typical of the complaints along this line:

"Construction work in these parts is now and has been impeded not a little, due to the unreasonable demands of labor not only for exorbitant wages, but more by the fact that certain very undesirable trade rules are being enforced by labor organizations, which run up the cost of doing work enormously."

Many of the contractors and builders in the Central West assert freight rates are the chief trouble. Typical of these arguments is the following from Greenville, Ohio:

"We have no complaint to make in the matter of securing credits, building materials and labor. It is true that wages are quite high and yet not prohibitive. The greatest detriment to our industry through the Central West is prohibitive freight rates on sand and gravel. It is not only threatening to destroy our industry but at the same time it is impeding highway construction and other building projects which demand a high grade of these basic materials."

Lack of co-operation on the part of financial interests seems to be the outstanding obstacle in New York. One of the best authorities on the building industry in New York City sums up the situation there in this fashion:

"We have in the United States serious difficulty owing, principally, to the unwillingness of financial interests to co-operate in building projects with the material and labor market in its present condition. We are working on a total of nine industrial projects involving approximately 6000 workmen's homes, to be carried out by private interests in various important industrial centers, but in each case we are hampered by the building loan situation. The only definite work we expect to carry out without delay is located outside of the United States."

From St. Louis, Mo., a well known architect writes: "I am firmly convinced that the one thing the building public wants to know is the cost

of building today as compared to the next three to five years. If they could be assured that the cost will not drop within that time, there would be a tendency to proceed with the needed work."

As for the last question the Information and Education Service of the Department of Labor, through the Division of Public Works and Construction Development now is seeking, authoritative information as to what can be expected in material prices for the next five years. While the investigation lacks completeness at this time, no definite conclusions may be stated. Many eminent building and material authorities, however, insist that no marked decrease in material prices may be expected for the next five years. They assert with some positiveness that pre-war prices on building materials will not be re-established for several years, if ever. They assert that persons who delay building in the hope of marked reductions in building costs probably will be disappointed and will have denied themselves the use of needed property and the revenues which would be derived therefrom.

In response to the Department of Labor's inquiry as to future rates on building and construction materials, the U. S. Railroad Administration asserts there is to be no general 30 per cent advance on freight rates for sand, gravel, crushed stone and slag. The rumor that such advances were contemplated was arousing anxiety in the Central West. Under date of January 20, the Railroad Administration put out a circular which says: "There is no foundation for the report that the Railroad Administration has given or is giving any consideration to any increase in present basis of rates."

The Department of Labor points out that building, being a basic industry, will stimulate general business and is, therefore, very vital to continued financial prosperity. The national economic loss resulting from the idleness of thousands of men cannot be permitted and its injurious effects escaped. Present building costs are not so high that they equal in the aggregate the wealth the country loses through the idleness following in the wake of building stagnation. Homes are needed, business quarters are needed, public works are needed! The United States is the wealthiest country in the world! The most reliable authorities in the country assert that unprecedented prosperity is ahead! Why longer delay the revival of building?

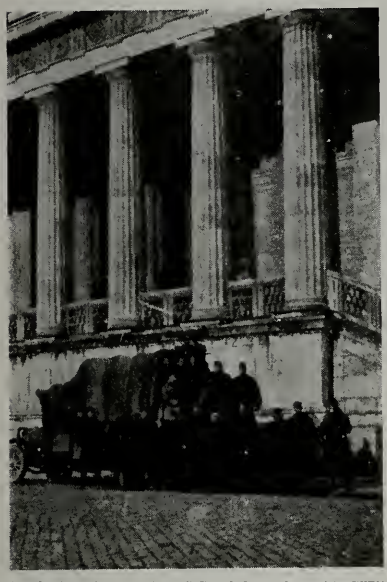
* * *

No Material Reductions Expected in Lumber Prices

Mr. Horace F. Taylor, president of the National Wholesale Lumber Dealers' Association, writing from Buffalo, N. Y., to the Division of Public Works and Construction Developments of the United States Department of Labor, does not hesitate to say material reductions in lumber prices will develop very slowly, if at all. Mr. Taylor says:

"The very clear majority of opinion we derive from representatives of the industry in all parts of the country is in effect that there will be no further reduction in the cost of lumber for a long period, and that there is no safe ground, therefore, for postponing building in the hope of a price reduction in this material. We look upon the present rather quiet conditions as temporary only and due to industrial readjustment, soon to give place to very sound activity. The cost of making lumber offers no chance of reduction, both on account of materials and supplies, and the cost of labor, which it seems not only necessary but desirable to maintain at as nearly an adequate rate as possible in view of the present cost of living. In addition to the ordinary increase in demand that is expected, an unusual call for lumber for export to Europe will soon begin to have its effect on the situation. Logging conditions during the present winter have been unfavorable, particularly in the North, and lumber production will apparently be less than that of normal years for some time to come. There is only one possible conclusion based upon the opinion of those consulted and that is that as far as the lumber market is concerned the present is an advantageous time to purchase."

San Francisco Architect Founds New School of Architecture in France



GROUP A. E. F. SCHOOL OF ARCHITECTURE AT TOURS, TAKEN IN FRONT OF PALAIS DE JUSTICE

MR. ERNEST COXHEAD, a member of the firm of Coxhead & Coxhead, architects in the Hearst building, San Francisco, who went overseas some months ago to do work under the auspices of the Y. M. C. A., has been transferred since the signing of the armistice to the department of education in France, and has been assigned to a district covering an area of more than 100 miles, with headquarters at Le Mans, a city of 120,000 civilian population. His work has been to group together the architects and students of architecture who were drafted in the army, giving them instruction and opportunity for further study and work during the time they may remain in camp. The progress these men have made is indicated in a letter received by his brother, Mr. Almeric Coxhead, and in the following news item which appeared in "La Larthe" Journal Quotidien, Le Mans:

Jan. 26, 1919.
Le Mans, France.

I received your fine letter yesterday—the day after my return with the thirty or more Soldier Boy Architects, from our grand tour of the cathedral towns and chateaux of this region of France, and I was immensely pleased to get the letter, as well as one from Mary and Bud, all fine long letters, full of your Xmas doings—news that I have been looking forward to for so long—at least, it seems long to me, as I have now been absent from you all over seven months.

Bud tells me of the flu he had and that he had gotten over it. He always registers a few "wants" in his letters, which entertain me and gives me new ideas. This time it is French posters, of which I have three or four, but no means of sending, I am afraid, without injuring them by folding; however, I will see about it.

The trouble is that I have no time to do anything, as my work demands now more time than I have to spare.

Several of my boys (in the school) have "service stripes," and I may get one myself later—I don't know—they give them to "Y" men over here.

Well, now about the A. E. F. School of Architecture, which is my creation here, and of which I am proud: We have today finished our first course of intensive study and yesterday and today inaugurated a public exhibition at the school of the work done by the boys during the "course." Yesterday afternoon the exhibit opened promptly at 2 p. m. and continued to 9 p. m., then again today, Sunday, it was open from 2 to 5 p. m. It is to continue for a day or two more, as so many others want to see it. So far about 275 people or 300 have visited the exhibit, and it is curious to see how interested the French people are in the drawings, which cover the walls, and the sketches which are shown on the tables. There are about 250 drawings on the walls, all made during the course by the thirty men in the school! So you see the amount of work accomplished, and they are all drawings of merit, some very fine indeed, equal to the exhibits of architectural drawings in the States.

This morning I reported to Army Headquarters that I had finished the first course as per schedule, and when the officer visited the exhibit of work done he said the work was too important to let it drop and authorized the second course at once, which commences right away tomorrow morning at 8 sharp. That is the way the army does things here when they are satisfied.

The final week of the course was mostly taken up with the tour of the country for miles around. We left here Monday last (as per schedule) at 7:30 sharp in the morning—thirty soldier boys of the school in a cammion auto truck and five days'

GROUP PICTURE OF MEMBERS OF THE A. E. F. SCHOOL OF ARCHITECTURE AT CHATEAU DE BLOIS

(Mr. Ernest Coxhead, on extreme right)

traveling rations—iron rations, the boys call them, because they are all in tins—blankets, etc., for Chartres, 100 kilometers, which we reached about 1 o'clock (trucks make about 12 to 15 miles an hour). Then we billeted, having opened our rations at a village cafe on the way, all in military style, myself in command of the expedition. I have visited Chartres before, but we found the cathedral (specially) and town more interesting and profitable for architectural study than ever. It is great, especially the grandeur of the western facade. It has stood there for nearly 800 years. We made drawings and sketches before leaving the next morning, and arrived at Orleans about 11:30, saw the cathedral and other things, but it is not interesting, so pushed on to the chateaux of the Loire, which are scattered along the valley of the river for miles. We reached Chambord in a couple of hours or more. This took the boys by surprise and wonder, and the great park and gardens were something to open their eyes. From here on to Blois, which we reached with a magnificent sun setting behind the town and chateau Blois on the hill—a sight never to be forgotten by the fellows. It rained a few hours here, otherwise the weather, though cold and freezing, was perfect.

From Blois we went next morning to Chaumont (chateau) and on again to Amboise, both along the river Loire. Amboise is wonderful and we had good accommodations there and plenty of time to sketch and draw, as well as to visit the historic chateau, famous for associations with Francis I., Catherine de Medici, etc., etc.—a wonderfully picturesque village surrounding the castle From amboise then to Chenonceaux sur le Cher. Whew! but that took the boys! We lost our way partly, but recovered it as I had complete maps of the whole territory with me on the front seat.

It is impossible to attempt to describe what we saw on this trip in a short space, so I will gallop along. From Chenonceaux (chateaux) to Azagle Rideau chateau, to Langeau chateau, to Chateau Lugnes, and from there to Tours, where we arrived and billeted late Thursday night. We were cold and tired, having driven and sketched every day since Monday. We devoted Friday morning to Tours cathedral and other interesting things. We sketched until we were frozen stiff, but the boys felt it was perhaps their last chance before returning to the States and kept at it. I had to call a halt and order all aboard, so we started for Le Mans and took in the Chateau of Le Lude on the way, arriving at Le Mans at 5:30 Friday, frozen and hungry at the school.

There was not a hitch in the whole trip and the boys were fine and did everything I asked or suggested. I detailed different men during the trip to certain duty: one for the commissary, another to attend to billeting, and so on, while I reported to the Provost Marshal at each place where we stopped. In that way we got along finely without loss of time.

I am now laying out the schedule for the next course, commencing tomorrow.

The French people were fine all along the way and helped us in many ways to study the things we wanted to see.

I shall have lots to tell you about this trip and the school when I return. I am now planning to establish other centres of architectural interest for the boys at various important points in France with a stationary Director of Architecture, so that the students can be sent from one place to another after having finished a course and thus cover more of France. This plan will probably take me to Paris for a conference with headquarters maybe this week.

Later I hope to get up in Major General W. G. Haan's (Uncle Billie's) territory with the Army of Occupation on the Rhine. So far I feel pleasantly confident I have done fairly well at my "job," and the hard work seems to agree with me as I am perfectly well.

With love to all,

Yours affectionately,

ERNEST COXHEAD.

The newspaper item announcing the architectural exhibition conducted by Mr. Coxhead is reprinted here just as it appeared in the French paper:

Y. M. C. A—Ecole d'Architecture des Troupes Américaines

Sous le patronage de l'Y. M. C. A. des soldats américains se sont groupés afin d'étudier les differentes manifestations de l'Art français en notre ville.

Une premiére exposition publique de leurs travaux est organisée au 2e étage de l'Ecole municipale de dessin, place Saint-Pierre, le samedi 25 et le dimanche 26, de 14à 17 h.

Votre visite serait pour eux un encouragement et une récompense.

A second letter from Mr. Coxhead under date of February 6th, reads:

Just a line with enclosed clipping from Paris edition of New York Herald which appeared today.

My school is going to Paris for six days' visit to study architecture there in my charge. I had the army travel orders today. Also we will hold our second exhibition of the work of the school, there, at headquarters of the Army Education Commission. What do you think of that?

I have had many complimentary things said of the work I am doing here. Some of the men may get into the Beaux Arts yet.

I have to go into conference about the expansion of my work when I arrive in Paris, having just received a letter to proceed there at my earliest convenience, which I had already arranged to do with thirty men of the school on Sunday next. We shall be back the following Saturday.

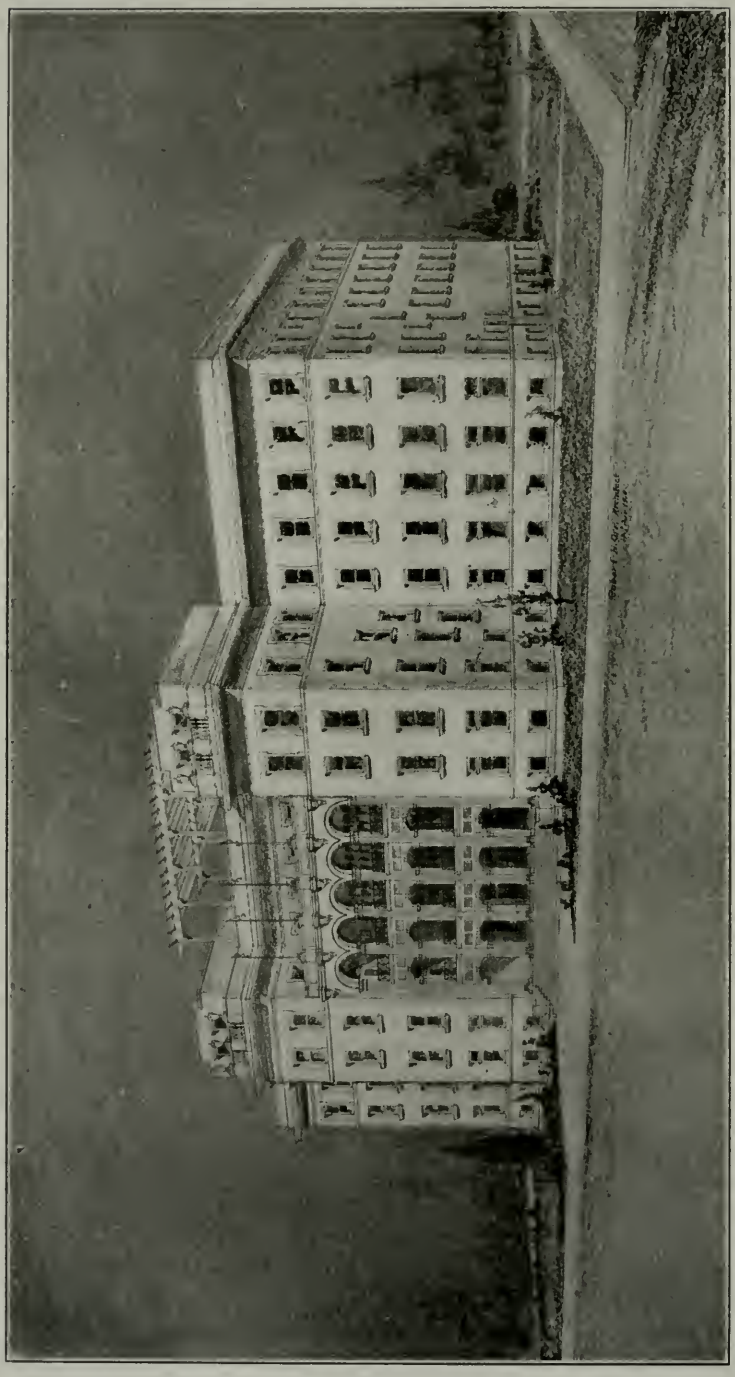
* * *

When The Floor Cracks

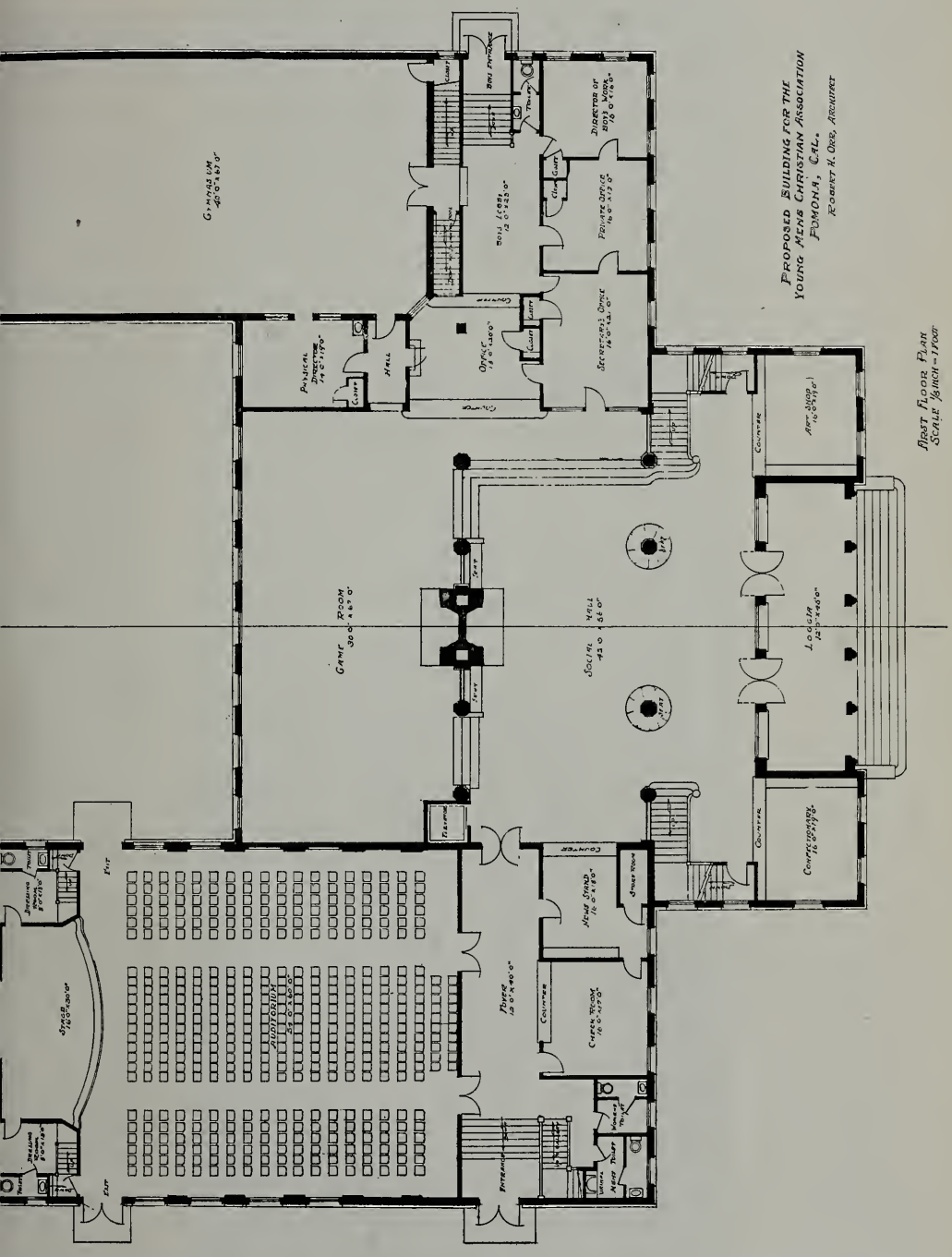
It is a source of mortification to the builder when he is called in to inspect flooring after it has been in use for a time and which has cracked and opened. The builder has done conscientious work and may say helplessly, "Well, it shouldn't be that way—the best of stuff and workmanship are in it." But the blame is put on him, and it is pretty bad advertising, for "people will talk."

Mr. William F. Miller, in Farm and Fireside, notes that the thin hardwood floor laid on common flooring over a cellar frequently cups or opens at the joints. That is due to the moisture in the air in the cellar. To prevent this, cover the entire sub-floor with a heavy building paper before the finished flooring is applied. This will reduce the possibility of the wood's swelling to a minimum.

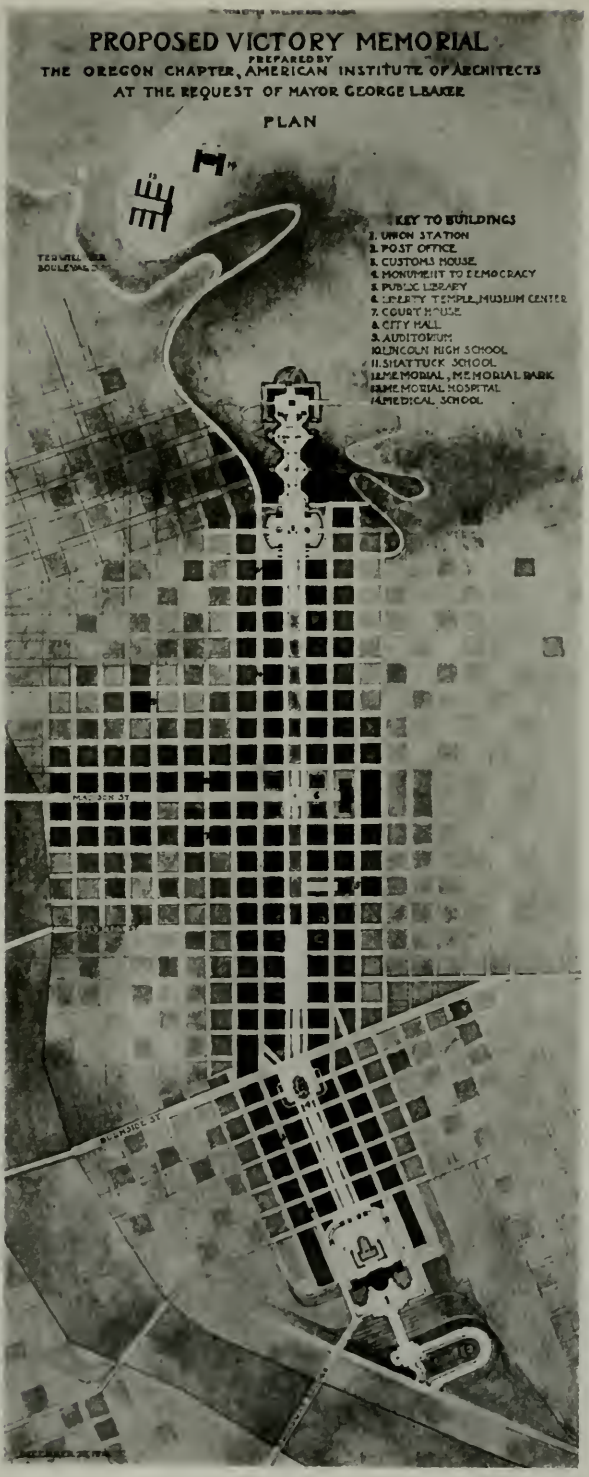
There is often an unsightly opening in a beautiful hardwood floor. You do not know the cause of the crack. Sometimes it will close tight in the summer and open wide in the winter. That is caused by the wood's swelling in the warm season and drying in the winter when the room will have uniform heat. In most cases, if the common flooring had been covered with heavy building paper, the crack would not have occurred.



Y. M. C. A. BUILDING, POMONA, CALIFORNIA
ROBERT H. ORR, ARCHITECT



FIRST FLOOR PLAN
SCALE ¼INCH=1FOOT


PROPOSED VICTORY MEMORIAL
PREPARED BY
THE OREGON CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS
AT THE REQUEST OF MAYOR GEORGE L BAKER
PLAN
KEY TO BUILDINGS
1. UNION STATION
2. POST OFFICE
3. CUSTOMS HOUSE
4. MONUMENT TO DEMOCRACY
5. PUBLIC LIBRARY
6. LIBERTY TEMPLE, MUSEUM CENTER
7. COURT HOUSE
8. CITY HALL
9. AUDITORIUM
10. LINCOLN HIGH SCHOOL
11. SHATTUCK SCHOOL
12. MEMORIAL, MEMORIAL PARK
13. MEMORIAL HOSPITAL
14. MEDICAL SCHOOL
BROADWAY ST

Report on Victory Memorial by the Oregon Chapter of Architects

TO His Honor the Mayor, George L. Baker: In accordance with your request, a special committee appointed by the Oregon Chapter of the American Institute of Architects submits herewith tentative sketches giving a possible solution for handling your suggestions for the Victory Memorial. The committee offers this merely as a guide for further study and it should be remembered that no attempt has been made to solve the various features in detail.

The committee is of the opinion that a permanent Victory Memorial organization should be formed, State-wide in character, with local chapters similar to the Red Cross organizations. These chapters might conduct Victory drives throughout the State, to secure funds for such approved portions of the scheme as cannot be taken care of by State or city funds.

The Memorial should be looked upon as a demonstration of appreciation of our great victory over autocracy, as well as a permanent tribute to the sacrifices of our troops, doctors, nurses and war workers. The completion of the scheme would naturally be the work of several years, but when finally completed would make Portland proud indeed.

The scheme, in accordance with your suggestion, contemplates a monumental treatment of the park blocks which become an approach to the great shaft of Victory—the Memorial Park, the Memorial Hospital and the Victory Highway to the State Capitol.

Treatment of the Park Blocks

1. *Central Union Station.* This is an absolute necessity in the near future if Portland is to hold its own as an up-to-date, prosperous American city. The solution suggested is for one station, fronting a great plaza at the north end of the park blocks. The grades can be so arranged as to eliminate all grade crossings or disturbance of the present train yards.

The Broadway bridge would connect with the upper level of the station, offering possibilities for a loop system for the street cars feeding the station. The electric suburban lines also can terminate at this station of the lower level without crossing other lines.

The cost of this improvement should be borne by the railroads. It is due Portland that she should have such a railroad entrance, for at present the traveler's impression of our city as he goes through our station to the approach uptown is that of a third rate town of about 50,000 population.

The local chapter of the State Victory Memorial Association would be very effective in moulding public opinion to secure the new station from the railroads.

Municipal Dock and Passenger Landing

2. This should be made attractive in itself and should connect over the train yards with the central station. In this manner visitors entering the city by water may connect with outgoing trains by a dignified viaduct, in place of the disgraceful condition they now are confronted with. The approaching harbor and river developments, with its ever-growing water passenger traffic, will make this vital.

Memorial Entrance to the Park Blocks

3. Leaving the central station via the depot plaza, the entrance to the great "Victory Mall," which in the scheme the park blocks would become, should be marked by a great gateway. This will serve also as the real gateway to the city. Pylons are suggested rather than a memorial arch, in order to not to obstruct the tree-lined vista from the depot plaza. These pylons should be a part of the State Memorial, indicating perhaps symbolically the form of services rendered by Oregon in the great war.

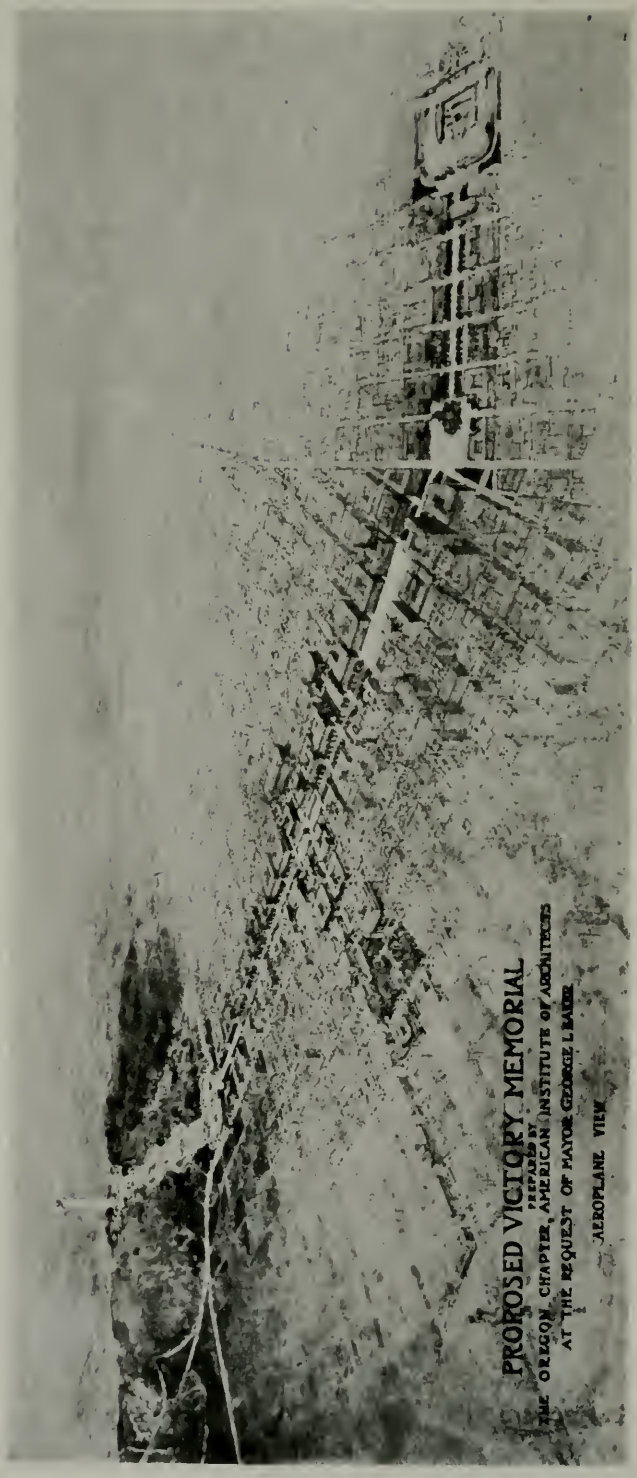
The Monument of Democracy

4. This will be seen at the point in the Victory Mall where it changes direction, just north of Burnside street. From the Memorial Gateway this monument would appear through a tree-lined boulevard against a green background.

Burnside street is destined to be widened at some future time, as it is a logical traffic way, a part of the "belt line" feature that some day will be needed to diminish congestion uptown. All traffic on Burnside street will cross the Victory Mall at this point, passing by the Monument to Democracy, which will also be seen from the axis of the upper Victory Mall looking north.

Carrying Through the Park Blocks

5. Between Ankeny and Salmon streets, the park blocks are not built upon. These should be condemned and the great Mall carried through without interruption. A dia-


PROPOSED VICTORY MEMORIAL
PREPARED BY
THE OREGON CHAPTER, AMERICAN INSTITUTE OF ARCHITECTS
AT THE REQUEST OF MAYOR GEORGE L BAKER
AEROPLANE VIEW

gram is submitted showing ownership of needed property. Appraisals have been partially made on building values. President Murphy of the Realty Board offers the services of their appraisal committee to complete such appraisals if desired.

Upon first consideration the cost of this portion of the plan seems to make it prohibitive. In comparison with what other cities have done along similar lines, the task should in no way overpower Portlanders. Such examples are found in recent improvements in Philadelphia, Springfield, Mass., Baltimore, Ohio, etc.

The value of this great artery in relieving traffic congestion, as well as a fire protection similar to Van Ness avenue in San Francisco, cannot be over estimated.

Suggested Methods

Special legislation should be passed at the coming Legislature to enable cities to make use of the principles of excess condemnation.

By this power to condemn abutting property in addition to that actually needed for the improvement, resales may be made, bringing the increase in values to the city, while at the same time the municipality may sell with restrictions, thus protecting the investment made in the improvement.

By this method Paris made a similar improvement, through a congested center, to secure the Avenue de l'Opera, leading to the Grand Opera House. This great boulevard was completed at an actual profit to the city of Paris.

Special legislation might also be passed, giving cities the right to condemn for future public use, with rights to profit from incomes from leasing, etc., while holding the property for the contemplated public use. By this method the property needed could be condemned and re-leased; the profits compounding would, inside of a few years, be sufficient to pay off the bonds without cost to the taxpayers.

Liberty Square

6. Madison street, connecting, as it does, the park blocks with the present Civic Center, will always be an important street in any such scheme. Liberty Square is developed at the crossing of Madison and the park blocks already fronting that point are the Ladd School and the Congregational Church. The other two corner sites should be utilized for such buildings as a Liberty Temple and a Historical Museum.

Madison street is shown terminating at the entrance to the Art Museum on the long block west of the Ladd School.

While these buildings would be local in character and not a part of the State Memorial proper, they would become a part of the local chapter's work to secure. The Liberty Temple to commemorate the splendid community service centering around the present temporary temple.

A study of existing collections of great historical value, now promiscuously housed, is conclusive evidence of the needs for a Historical Museum.

The excellent work of the Portland Art Association is seriously handicapped by inadequate quarters. Many cities of Portland's size already have great museums of art wholly or partially built.

Portland as a center of culture and arts should strive to get the first unit of her permanent Art Museum under way. Such structures take large areas and it would be hard to find in the city a more attractive and practical location for this museum.

Public Buildings

7. The postoffice, custom house, schools and other public buildings to come around Liberty Square and elsewhere will have a proper setting facing the Victory Mall.

The Central Library, always important enough to have fronted on the park blocks, could be brought into the scheme by securing the block to the east, between it and the Mall.

Traffic and Tree Treatment of the Mall

8. From the Memorial Pylons at the north end of the Mall to the Monument of Democracy is suggested a broad central driveway, with trees on either side and with smaller roadways on the sides. Parkings with the sidewalks finish out the 225-foot width.

Two blocks above the Monument of Democracy, to Morrison street, the Mall takes on the appearance of a great elongated square without plating in the center, to break the open effect. Islands at the crossings would be provided for pedestrians.

Above this point to the gateway of the Memorial Park a wide wooded parking in the center, with roadway on either side, is indicated.

No street cars should be allowed on the Victory Mall, excepting points of crossing.

Memorial Peristyle

9. This peristyle becomes the transitional feature from the Mall to the Memorial Park and to the State Highway. It serves as an admirable motif, accessible, dignified and imposing, for the memorial tablets recording the story of the men of Oregon who were in the service.

Memorial Park and Shaft of Victory

10. The Memorial Peristyle is the real entrance way to the Memorial Park. Continuing the axis of the Mall up the hillside in the midst of evergreens would rise the terraces or water motifs, if the latter were found to be feasible, to the great shaft of Victory or some other suitable feature, such as a domed building or large statue dominating the entire country for miles, as well as being constantly in sight from the upper Mall. The topography of the property lends itself also to a Greek theatre. This park would be part of the city park system, and if connected, as it should be, to Pennoyer Park, would include a bit of virgin Oregon forest.

Victory Highway

11. Through the peristyle one enters the approach to the Victory Highway, which leads out of the city over a portion of the Terwillger boulevard and thence on a five per cent grade up by the Memorial Hospital.

State funds, already provided for, could well secure this highway from the county line to Salem, while county funds could be secured for the portion in Multnomah county. This highway should be under the control of a suitable commission competent to pass upon its monumental features.

Memorial Hospital

12. Nothing could be more appropriate, in such a comprehensive scheme, as a Memorial Hospital, conducted under the direction of suitable State medical authorities. Funds for such a structure might be secured from city, county and State sources. The spirit of humanitarianism expressed in this group is a fitting climax, together with the Victory Monument, to the whole scheme. These would be in high ground near the University of Oregon Medical School, overlooking the city, with excellent air drainage and maximum sunlight.

It is suggested that the administration building of the group be treated in a monumental manner, including in its rotunda the memorials to the Oregon medics and nurses in the great war.

The committee feels that it would be a mistake to bring into this building the tablets commemorating the men in other branches of service, for the general public should not be lured to such a structure. Rather should its humanitarianism be felt by all the city at its feet.

Control of the Monuments

13. After the Civil War, the country was deluged with stock cast-iron statues of atrocious design. These have made a laughing stock of American commemorative art. To avoid this your committee strongly urges that only the highest grade of artists in their respective lines be employed.

So important is this that a commission especially organized from the Victory organization might have a veto power in selecting the artists for all Victory Memorials to be erected in the State. From this brief description of our suggested solution of your ideas for the Victory Memorial it is evident that the entire scheme can be worked out without serious financial hardship to anyone.

As State funds are said to be available now for a hospital and for highways, the Victory Memorial Association should urge proper legislation to immediately secure these features of the Memorial. The popular subscription, which will, after all, be the real test of the people's appreciation of the sacrifice of our boys, should, it seems to your architectural committee, be concentrated for the present on the Memorial Peristyle, the Memorial Park and the Victory Monument.

(Signed) JOSEPH JACOBBERGER,
President Oregon Chapter, American Institute of Architects.

Oregon Chapter, A. I. A., Committee on Victory Memorial:

Joseph Jacobberger, E. F. Lawrence,
A. I. Doyle, W. G. Holford,
John Bennes, M. H. Whitehouse,
Fred Webber, Alfred Smith.

December, 1918.

"OWN YOUR OWN HOME" HEADQUARTERS, PORTLAND, OREGON

"The Better Way"

[*A clever explanation of the need for employing an architect has been issued in attractive pamphlet form by the Portland "Own Your Home" campaign committee for free distribution from their bureau in the bungalow at Fourth and Stark streets. It is not copyrighted and may be used elsewhere. This is one of the good results of the close co-operation between the Oregon Chapter of the American Institute of Architects and the business men behind this movement.*—ED.]

"YOU are a sight," said Mrs. Henry, as her eyes rested upon her husband, standing in the basement doorway, his face and hands grimy, his clothes covered with dust. "Must you get yourself in such a mess every Sunday?"

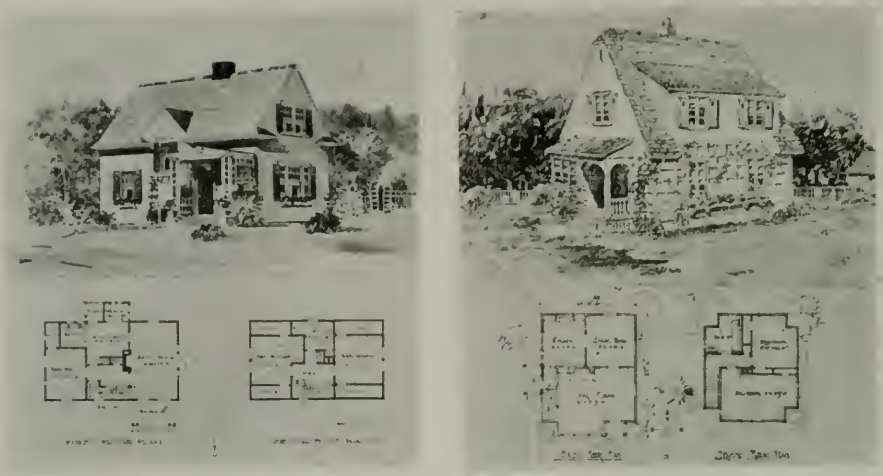
"I don't see how it is to be helped," said Mr. Henry, apologetically, "so long as we live in this house. The landlord says he can't afford to repair it, and heaven knows I don't want to spend any more on it. One of these days it will cave in on us if we stay here. But I have just about made up my mind that we are not going to stay much longer. I am going to build a house."

"Well, John Henry, that is the most sensible thing I have heard you say since you told me to get my fur collar—and that is some time ago."

"I always figured we could be happier in the family if we owned our own home. Besides, when you stop to think about it, living in a rented house makes a family more or less of a tax dodger, a sort of slacker, in civic duties, doesn't it?"

Mr. Henry smiled and started upstairs to change his clothes.

"You get out the back numbers of your 'Woman's Friend,' he called to her, "and when I come down we will see if we can find a house in them to suit us."



SUGGESTIONS FOR MODERATE PRICE HOMES
Contributed by Oregon Chapter, A. I. A.

"Do you think we can afford to build?" asked Mrs. Henry, a note of anxiety in her voice, as they sat down by the living-room table, covered with brightly colored magazines.

"If what Jimmy Brown told me yesterday about borrowing money is true, we can. He says I am foolish to live in this shack until I can pay cash for a new house, as I have always intended to do. We could have the pleasure of living in a new house, and the rent money would help to pay for it."

"We have money enough saved up to buy a lot and to have a little left over. I can borrow something on my life insurance policy if absolutely necessary. Brown says there are several loan companies in town making building loans which can be paid off in the form of monthly payments scarcely larger than our monthly rental. Then I know where I can get a first mortgage of at least 50 per cent of the value of house and lot at a lower rate of interest than we would pay if we paid off the loan

Contributed by Oregon Chapter, A. I. A.

monthly, and Brown says he can get us a second mortgage into the bargain, if we need it. If we make a monthly deposit in the savings bank amounting to what we can pay the landlord, we would be able to pay off this second mortgage well before the first mortgage matures.

"Here's a sweet house," said Mrs. Henry, passing the magazine over to her husband. "I don't like the position of the bathroom, and I would like the fireplace on the other wall; but the builder could no doubt make any little changes like those. What about a sleeping porch and a——. There's the door bell. See who it is. Why can't people stay at home!"

"Hello, Jimmy. The very man I want to see," said Mr. Henry, bringing his friend into the living-room.

"I hope I haven't interrupted a literary afternoon," said Brown.

"No, this is an 'own your own home party,'" said Mrs. Henry.

"It is the result of our conversation the other day," said Mr. Henry. We are looking through these magazines for a house to build. This is the one we have selected."

"Don't you think it is pretty," said Mrs. Henry, passing him the magazine.

"Yes, it is pretty," said Brown, "if it is just what you want."

"Not quite," said Mrs. Henry. "We want a sleeping-porch, and the bathroom isn't where we want it; but I should think the builder, if he knows his business, would be able to fix that up all right."

"Henry tells me that he has had his eye on that lot by Jones, on View Ridge, for some time," said Brown. "Do you think this house would fit it?"

"Why not?" said Mrs. Henry, as if the idea were new to her.

"Let's place the plan the way it would have to go on the lot. There. Now, you see what happens. The kitchen faces southwest, the dining-room northwest, and the veranda faces the bank at the back of the lot, and has no view at all. I know everyone hates advice, including myself, but I want to give you a little, anyhow."

"Go ahead," said Henry. "You know, old fellow, we don't have to take it."

"I have had some experience in house building," said Brown. "The first house I built was done just as you are starting to build now. I hate to think of it. Nothing was right. I asked the builder if he could make a few changes in the plan. The first change ruined the stairs; I was trying to get more room in the hall. The next one spoiled the kitchen; I wanted a larger pantry, which afterwards I found to be larger than necessary.

"The house I selected was of the Colonial type, with delicate woodwork. Of course, we had no drawings, only pictures, which meant that the builder had to guess at the size and shape of everything. The pitch of the roof, the projection of the eaves, the height and width of the windows, the design of the chimney, the size and shape of the columns to the front porch—they were drawn in so much at the top that they looked as if they had been choked; the fireplace was too small and the mantel shelf and moldings around it were much too heavy. The newel posts to the stairs were twice too thick, and the turned balusters looked as if they had the dropsy. In fact, nearly everything was more or less wrong. But when you think of it, you could hardly expect it to be otherwise.

"A builder is not a designer. His training is to make him capable of executing designs, not the creation of them, and most good builders feel

that they have enough to do to carry out work properly without trying to design it.

"I want to ask you what you think would happen if you got a builder who didn't want to do the right thing? What protection would you have? Can you tell when concrete has enough cement in it? Can you tell good brick from poor ones? Would you be able to tell if the painter was doing his work properly? I don't think you would.

"Perhaps the hardest part of my experience, however, was the fact that I had several liens put upon the house as we were moving in, and I had to pay several material bills the second time."

"Do you know," said Mr. Henry, "if you go on at this rate you will discourage me from building altogether."

"Yes, and then we will have to spend the rest of our days in this shack," said Mrs. Henry.

"To discourage you from building is the last thing I want to do," said Brown, "but I want you to start right, and the only way to start right is have a house designed for your own special needs, and one that will really be your own and not merely a poor copy of some other person's. And when you come to think of it, do you think it seems quite right? A man, by the exercise of his judgment and taste and the expenditure of his money, is the possessor of a beautiful house. Can you believe that he would take pleasure in seeing it copied, more or less badly, in all kinds of unsuitable locations? I don't think so."

"But what are we to do?" said Mrs. Henry. "We can't afford to employ an architect."

"I don't see how you can afford to do anything else," said Brown. "And I am speaking now from a financial standpoint. I know many people are loath to believe that beauty in a house has a money value, but I am convinced that it has. Beautiful roof lines, beautiful proportions, beautiful color schemes, cost no more than ugly ones; yet who will say that these do not add to the value of the house?"

"Of course, I want a pretty house," said Mrs. Henry, but I want a convenient house also; are architects practical enough to secure what I want?"

"A real architect," said Brown, "is far more likely to be a practical man than a practical man is likely to be an architect. A true architect begins by the love of his art, and he will naturally take pains to acquire practical knowledge, not merely from an abstract interest in it, but because he knows that it is necessary to the successful development of his art. But the converse does not follow. The so-called practical man does not trouble his head about architecture, because it does not interest him, and because he believes that he can get along very well without it. And the results we see every day."

"Besides, the architect protects your interests by drawing a proper contract with the builder, securing a proper bond from him. By his method of certification of all payments to the builder you are protected against the danger of dishonest contractors, or unfortunate ones who may fail while executing your work. The architect often saves several times his fee by securing real competition in bidding, which of course cannot be secured from imperfect data to figure from."

"If we should want to employ an architect," said Mr. Henry, "how should we go about it?"

"Nothing simpler," said Brown. "Find an architect whose work you like. Show your lot—or, better still, let him help you choose it; tell him

the general style of the house you want, and how much you want to spend. He will make sketches showing plans and elevations. When you have approved them, he will make working drawings, write the specifications, and let the contract. He will furnish the builder with detail drawings of doors, windows, mantle pieces, cupboards, etc., and constructional details where necessary. He will superintend the construction of the house from the time the basement is dug until the house is turned over to you complete. He will see that you get material of the quality for which you are paying, and that it is put together in a workmanlike manner.

"And now my lecture is over," said Brown, "for which I apologize."

"You ought to get a commission from the architect that we employ." said Henry, laughing.

"It will be commission enough to know that you will have a home that will be a pleasure for you to live in, and for others to look at. I would like Portland to be not only the city of roses, but also of beautiful homes; and every man who builds a beautiful home, whether large or small, besides adding to his own satisfaction, is doing a real service to the community, for its architecture, especially its domestic architecture, is in a very real sense a gauge of its civilization."

* * *

Housing Situation in the Bay Cities a Serious One

By HARRY A. LAFLER, Secretary Oakland Homes Registration Committee.

THERE is a widespread impression that because the war is over and the pressure at the shipyards is not so great, that there is a letup in the need for more homes in Oakland. [Practically the same conditions are applicable in other California and Pacific Coast cities.]

This impression is absolutely erroneous. There never was a time when the need for more homes was greater than it is today. Any vacancies that have been created by the shifting currents that have followed the end of the war have been filled as fast as they occurred. There are practically no vacancies, save those that constitute the very dregs of the city's housing facilities.

Scores of families are being turned away from Oakland every month because they cannot find suitable places to rent. Returning soldiers find it difficult to get a place in which to live. The growth of the city has practically stopped—for the amount of residential building that is going on is still negligible.

No progress in solving the housing problem can be made until it is clearly recognized by the controlling forces of the community that the housing problem here cannot be taken care of promptly by private initiative; that the problem is far too big and complex for such solution; that it is a community problem and must be faced as such.

In cities that grow slowly and consistently, especially where industrialization is not marked, undoubtedly the question of housing workers may to a great degree be taken care of by private effort; but when a great and sudden industrialization takes place, as it has in Oakland, the ordinary methods break down. In fact, in Oakland the greater the need the less has been the response of capital to that need. The more houses the workers require, the fewer were given them.

The community enthusiastically welcomes the shipyards and other industrial plants. Through its civic organizations it seeks such plants. To

operate these plants, when they are once here, labor is needed. To take care of these workingmen and their families more houses are needed. Is not the city—the community—responsible for the proper housing of the men necessary to operate the plants which it has sought and welcomed? If labor becomes dissatisfied because the workingmen find themselves compelled to accept insanitary and dilapidated houses, is it not the city that will be finally called to account? The whole success of the city, in every aspect, depends upon whether slum conditions are to be permitted to fasten like a cancer on the community, or whether a heroic effort is to be made to bring the housing conditions for the workingmen at least up to a normal level.

Every business in the community benefits greatly by the presence of these workers. They add to the income of every professional man; they swell the profits of everp public service corporation. Can the elements of the community which reap the harvest of profits wash their hands of the responsibility for the conditions under which the workers are forced to live?

Between last February and September, Oakland added from ten to fifteen thousand people to its population, absorbing practically every available housing resource of the community. But now, due to the lack of building, the growth of the city has practically stopped.

The Housing Committee's figures show that 400 to 600 families monthly are being lost to Oakland because there is no place for them to live. People come here attracted by industrial, commercial and professional opportunities; they trudge the streets for days looking for suitable living quarters for rent. They are thoroughly disgusted by the "scrapings from the bottom of the pot" that are offered them, and they leave for Sacramento, Los Angeles, Portland, San Francisco, or some other place, "knocking" Oakland as they go.

And yet with such conditions, the building of homes is at a lower level than at any time during the last twelve years.

The reason for the housing shortage is not far to seek. It lies in the extraordinary industrial growth.

The United States Government Census of Manufacturers for 1914 gave the following data in respect to persons engaged in manufacturing industry:

	OAKLAND			ALAMEDA		
	Wage Earners.	Salaried Employees,	Total.	Wage Earners.	Salaried Employees.	Total.
1909	6,905	1,079	7,984	915	111	1,026
1914	8,692	1,428	9,120	1,092	127	1,219

It will be noted that in the five-year interval between the census of 1900 and 1914 there was but a very slight increase in the number of industrial employees of the various industries. In fact, in Oakland, the increase per year in the number of wage earners amounted to only 157 men. The increase in the number of wage earners in Alameda amounted only to 35 men per year.

These figures from the United States Government Census of Manufacturers are confirmed by figures showing the expenditures for factory construction in the City of Oakland during the same year. From 1909 to and including 1914 the total cost of all factories erected in Oakland was only $365,000, or during a period of five years less than the cost of a single factory erected in Oakland in 1918.

Beginning in 1915, and continuing at even a more rapid pace during 1916, 1917 and 1918, a great industrial growth has taken place in these cities.

From a total of 8794, the number of wage earners in Oakland and Alameda in 1914, the number had increased by November, 1918, to 36,300, or over 400 per cent. This is one of the most sudden and extraordinary examples of the industrialization of a community (formerly only industrial to the slight degree) in the history of this or any other country. It accounts for the magnitude and urgency of the housing problem that has arisen.

But while this industrial growth has been going on paradoxically the building of homes has been falling off.

The exact number of homes built each year between 1907 and 1914 is shown in the following table:

	Two and One and a Half-story Houses.	One-story Houses.	Total.
1907	431	1,105	1,536
1908	383	1,648	2,031
1909	379	755	1,134
1910	419	1,387	1,806
1911	485	1,152	1,637
1912	485	1,199	1,684
1913	349	1,062	1,411
1914	273	836	1,108
1915	261	717	978
1916	220	748	968
1917	89	434	523
1918*	85	504	589

*To November 1.

With the beginning of the European war, the drainage of labor from house building and other industries, the increased cost of building material, the reluctance of the public to purchase homes under conditions of uncertainty, the timidity of capital, and, finally, the restrictions placed on building by the Government, resulted in the decline of home building in Oakland—which decline has been continuing practically up to the present time.

Such a decline in building, with the rapid increase in the industrial population, could only result in an acute housing shortage.

As will be noted from the above table, less than 600 houses were built in Oakland last year, up to November 1, and 1917, as compared with 1600 or over in 1911 and 1912, respectively, where there was practically no industrial growth.

Early in 1917, there were 3000 vacancies in houses, flats and apartments among the 40,000 houses in Oakland, or about one place in fourteen.

By February, 1918, this number had decreased to 2000; by August, to 600, and by October to less than 100, and those mostly very undesirable or high priced. From October to the present time a saturated condition as to housing has prevailed.

It is estimated that the building of several thousand houses is required to supply the need. Between 4000 and 5000 men work in San Francisco and many of these, with their families, would prefer to live nearer their work if they could obtain suitable places.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

THE

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FEDERAL AID FOR NEW BUILDING

The failure of Congress to pass the railroad appropriation bill has eliminated millions of dollars worth of building work from the total that had been counted upon as the first avenue down which the unemployed soldiers could pass to good paying jobs. As a result the entire influence of all Federal departments is being thrown in the way of creating a substitute avenue of quick employment through the building trades.

Banks are to be urged to immediately change their attitudes regarding building loans, manufacturers are to be encouraged to produce as much material as possible at once, and building interests are to be asked to let down the bars on construction so as to permit these building materials to be assembled, thereby giving employment to thousands who otherwise would have found employment on the railroad construction works while private building interests were waiting for prices to drop, to proportions comparable with individual rather than corporate purses.

SHIPS WITHOUT CURVES

The cry of "bricks without straw" would be no less strange to the ancients than the news of ships without curves to modern ears. Mail from England gives information which, however familiar to naval experts, will surprise most of the readers of The Architect and Engineer. The national shipyards started under Sir Eric Geddes, British Admiralty Controller of Shipping, are producing what are known as "straight-line ships" in which the customary curved lines are replaced by straight-line work adapted to simple engineering and ordinary labor. The ship lines are stated to be graceful and free from excrescences or angular effects, the straight lines being, in fact, scarcely noticeable in an eight-foot model. The practical result guarantees accurate and ready fitting ship plates where in the older methods curved plates and rivet holes could rarely be made to register precisely

and to which reaming and adjustments are troublesome and costly. The British yards include rail service to each berth, with American tvpe cantilever cranes 100 feet high, placing ten-ton loads at 100 feet radius and 360 degree sweep. Each yard is designed for "fabricated" or standardized ships, to which the new straight-line type is particularly adapted. Naval architects in thus smashing most conservative precedents issue a challenge to their colleagues on land which justifies a question mark on every commonplace and accepted feature in building design. It will be interesting if the changes in ship design, which apparently retard speed afloat, should develop greater speed, as did the enclosed body and streamline design in airplane work. Housing has advanced in keeping with the care used in ship design and the accounts of "beautiful little cities" erected for workers in connection with these British yards suggest that at last the man is no less important than his productions. May America maintain similar ideals and lead in their realization and practice!

CHARLES CRESSEY, Architect.

DAWN OF A NEW ERA IN INDUSTRIAL ARTS FIELD

A new era is dawning in the industrial arts field; war brought the opportunity. The war forced us to choose between aping Europe again now that the job over there is finished, or standing upon our own ability in the broad field of high class industrial art production and furnishing Europe from here. The schools must get to work in this serious business. The general schools must make their work in drawing useful; the schools for manual craftsmen must be busier and harder at work than ever; the schools for teaching designers have the greatest task for they must assure for us fine design for production on a large scale. And for this great work, which must be got under way immediately, our present schools are hopelessly insufficient in number and individually inadequate to the task. We have not a half dozen; we need a hundred even now.

Where are the great men who can see America's opportunities? Where are the educators that can lead and mould public opinion? Where are the long-headed manufacturers who have failed to regard schools as an asset yet who cry for designers now that Europe has called them back to defend the schools that trained them? Are there no giants among us who will assure the future of America in this field by acting at once? Let us have schools of industrial art, always more schools, and give them to us now!

RICHARD F. BACH,
Curator, Columbia University.

ARCHITECTS AND THE DAILY PRESS

We are to have a competition among architects for building plans for the million and a half dollar structure, the Bank of Italy is to erect next summer at the Powell and Eddy corner site, now occupied by the Techau Tavern. The winner of the selected plans will get a $90,000 plum, or 6 per cent of the cost of the edifice. There will also be four $1,000 prizes. A Fresno architect, R. C. Felchin, is one of the competitors, because of his record in designing the bank's structure in his town. Young Zanolini, an Italian architect, is also in it. The others include Bliss & Faville, who built the St. Francis Hotel and the Southern Pacific building at 45 Market street, and Reid Brothers, who planned the Fairmont Hotel, and earlier the Hotel Coronado, when E. S. Babcock brought his fortune from Indiana and put it into that building and in San Diego property. Lewis C. Hobart, who built the Palace Hotel of today right after the fire, and who has prepared the plans for the Federal Reserve Bank's new home on Sansome street, is another artist in the competition. It is said Willis Polk was invited to join, but declined for reasons best known to himself. Polk, it is understood, does not favor such contests.

The above is another example of newspaper ignorance of our architects and their works. It seems that nothing of importance ever transpires in the architectural profession of San Francisco that one or more of the city or transbay newspapers do not make a botch of it. Are the publishers indifferent to accuracy? Is the trouble with the reporter who

gathers the news or is it the fault of the parties who supply the paper with the information?

Some weeks ago there was a banquet at which a number of architects were invited. The names of the guests appeared in one of the city papers and five out of the twelve names were misspelled. One, announced as an architect, is and probably always will be just a second-rate contractor.

Referring to the above quotation from the Oakland Enquirer, those who took part in the Bank of Italy competition know that no such sum as $1,500,000 is to be expended by the bank on its new building; they know, too, that Lewis P. Hobart (not Lewis C. Hobart) had nothing whatever to do with the Palace Hotel plans, and as for designing the new Federal Reserve Bank anyone at all familiar with San Francisco building affairs knows that Mr. George W. Kelham, and not Mr. Hobart, is the architect of this structure, the drawings for which are now being made. The reference to Mr. Polk is stupid, since it is common knowledge that Mr. Polk has always been opposed to competitions and has never yet participated in one.

Engineers' Registration

Whatever doubts may exist on the advantages gained by professional registration, it is certain that there are few real disadvantages. The term Engineer is now too loosely used, and the new bill affecting California makes an attempt at limitations. All those affected by the proposals should study the text and avoid the afterthoughts usual to most bills of technical and far-reaching character.

Mr. Fletcher Talks to Engineers

The regular bi-monthly meeting and dinner of the San Francisco Association of Members of the American Society of Civil Engineers was held Tuesday evening, April 15, at the Engineers' Club. Mr. Austin B. Fletcher, chief engineer for the California State Highway Commission, delivered the address of the evening on "Building a Highway System for California." The lecture was illustrated with motion pictures and lantern slides.

NOTES AND COMMENTS

By "THE-MAN-IN-ACTION"

Advertising in Arabic

San Francisco newspapers have been merry-making in connection with the architecture of Islam Temple and more particularly over the "monumental nerve" of the architect who, being refused the pleasure of signing both the building and the plans, did weave into a frieze *"Allah is Great"—"Great is the Architect,"* all in the pure Arabic as he knew it. That is how the story goes, coupled with threatened wrath and vengeance dire within the Mystic Shrine, and hints of some differences between experts as to the true interpretation of the words. Those of us who have only a cigarette education in Arabic but have some knowledge of Mystic Shriners, may suspect that the trustful reader of the daily press, in gaining a good story, is being pleasantly spoofed.

Advertising in Architecture

The sober side of this question of names on buildings is of never-failing interest to the architect, who, in contrast to his colleagues in engineering, rarely finds the signature idea welcomed with real warmth by his otherwise devoted client. Some few years ago I overcame natural modesty enough to permit my name to be "placed inconspicuously" on a somewhat important building jointly with others entitled to the distinction. A recent visit disclosed the name stone overgrown with dense ficus repens—observable nowhere else on a considerable wall—showing that Nature and a diligent janitor approves the older ethics which a defaulting Institute fails to observe. It may be a coincidence that the not-over-modest display of official names elsewhere on the building stands clear for the admiration of men. However, this matter of signature is the least of professional troubles and it is possible that we all attach too much importance to the written word and undervalue the force and power

of things unwritten. The real issue is not the propriety of the signature as such but the motive calling it to light. If a signature means anything, it is solely for the information of the few who have a real interest in knowing the identity of an architect and it is certain that as an advertisement the name is an ineffective effort in this day of overlettered buildings, incomparably less effective than the publicity due to personal inquiry usual and natural to those who feel attracted by the merits of the work. Stripped of personal vanity and the halo of up-to-datedness, there is but small motive for a signed building where monumental character is absent, and it is rare that the reference is more than local anyway. A building or work worth attention is usually well enough known for the interested stranger to be readily informed and the blushing architect acclaimed. Forget the letter and fight for the inward spirit of advertisement, the obviousness of work well done, honorable to its architect, its city and to architecture.

"Build Now"

The authoritative papers issued from time to time by the U. S. Department of Labor should not be permitted to remain idle within a circle of those already converted. Building men should see that hesitant investors receive such circulars as "Is the Cost of Construction High," also "The New Price Revolution," by Prof. Irving Fisher of Yale University. The forceful circulars of the Portland Cement Association and other important trade groups are also in the best spirit of missionary effort and should be actively supported and quoted liberally.

Trial by Jury

At last we have a serious plan of reconstruction to discuss and a chance for thorough spring cleaning of the architectural household. "The Post-War Committee on Architectural Practice," 1741 New York avenue, Washington, D. C., has issued a frank and remarkable statement covering the whole field of professional troubles, and invites letters pertinent to the questions raised. Probably no investigation in any country—and these troubles are international—ever carried the promise and hope of success inspired by the present effort. It is a call to self-analysis and every man of spirit will answer the call as best he may. There is little need to restate grievances, but there is need of dispassionate writing in presenting suggestions for betterment under the headings named by the Post-War Committee.

Springtime!

Mr. Irving K. Pond has written a book named "The Meaning of Architecture" and the following spectacular review by Mr. Claude Bragdon illuminates the pages of a New York contemporary. Nothing is wanting but rose light and gentle music:

"Architecture is the expression of the psychology of a people, a record of their thoughts, their tastes—even their hopes, their dreams. But according to Mr. Pond it is more than this. A work of architectural art is primarily an expression of itself—the inner nature of its own becoming; a dramatization of those invisible physical forces which both maintain and menace it.

"To the extent that architecture becomes thus expressive and dramatic, it enters into relation with human life, and becomes expressive of that also, for the reason that the physical forces which determine structure have their correlatives in those obscure mental and psychic impulses and inhibitions which mould and modify character, and so determine destiny.

".....he identifies that rising and resisting force which finds expression in the column with the will to live, to adventure, to achieve; while that Nemesis which says to man, 'thus far shalt thou go and no farther,' he finds symbolized in the horizontal entablature—fate as opposed to freedom."

There is much more of this, but an overdose of quotations might be fatal. Mr. Pond is also accused of "exhibiting a certain truculence towards others." If this is a fact, heaven help Mr. Bragdon! C. C.

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Address all communications of Geo. M. Nelson, 810 Bank of Italy building, San Francisco.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

$200,000 Warehouse

Mr. G. A. Applegarth, architect in the Claus Spreckels building, San Francisco, has completed plans for a three-story and basement brick and mill construction warehouse, to be built on the property of the Cebrian Estate at Second and Brannan streets, San Francisco. The building will be equipped with an automatic sprinkler system. The entire ground floor will be arranged for offices, the finish to be gum. Building will be occupied by the United States Rubber Company.

On the opposite corner of Second and Brannan streets a five-story reinforced concrete warehouse is planned for the Sherman Estate. Mr. Stewart is the architect.

Form Partnership.

Mr. Chester H. Miller and Mr. Carl I. Warnecke have formed a partnership and have opened offices in the Perry building, Oakland. Mr. Miller will also retain his San Francisco office in the Call-Post building. Mr. Warnecke was formerly associated with Mr. John J. Donovan and prior to that was with Messrs. Bakewell & Brown. He is a graduate of the Beaux Arts School in Paris. The firm has nearly $200,000 worth of new work in prospect, including a summer resort hotel in Alameda county, apartment house for Mr. Charles F. Gross and four $6,000 frame houses for the same owner.

Plan New Church

Mr. H. M. Patterson, O. T. Johnson building, Los Angeles, has been commissioned to prepare plans for a new church edifice for the Eagle Rock Presbyterian Church. It will be located on the corner of Central avenue and Adams street. The new church scheme provides for two separate buildings, one to contain the main auditorium, offices of the church, social hall and committee rooms, and chapel or Sunday school building to provide quarters for the various departments of the Sabbath school, classrooms, etc. Only the chapel portion of the church will be constructed at the present time.

School Competition

The Board of Trustees of the Fowler Union high school district, Fowler, Fresno county, invites architects to submit plans for a new high school building to be erected at Fowler. The building is to be of masonry construction, and is to contain twelve classrooms and an auditorium. Further information may be obtained from Mr. Edwin Gower, clerk of the board, Fowler. Plans are to be submitted by May 1, 1919. A special election to vote bonds in the sum of $100,000 will be called shortly.

School Building

Messrs. Hunt & Burns, 701 Laughlin building, Los Angeles, have been commissioned to prepare plans and specifications for a new school building to be erected at Point Firmin, San Pedro. The building is to contain eight classrooms and an auditorium and will probably be of masonry construction. An appropriation of $45,000 has been made by the Board of Education for the erection of the building.

Eight-Story Apartment House

Mr. Edward J. Vogel, Union League Club, San Francisco, is the architect for an eight-story class C apartment house to be erected at the southeast corner of Powell and Sacramento streets, San Francisco, for Dr. John Gallwey, 177 Post street, and Mr. Wm. Dunne.

$35,000 School House

Mr. William H. Weeks, 75 Post street, San Francisco, has been commissioned to prepare plans for a $35,000 school house at Durham, near Chico, bonds for which were recently voted. Mr. Weeks will also make plans for a $30,000 school at Burlingame.

Residence and Garage

Miss Julia Morgan is preparing plans for a two-story frame and stucco residence and garage to be built on Lake Shore boulevard, Oakland, for Mr. A. J. Matson.

Architects Speeding Up

Mr. Daniel Huntington, president of the Washington State Chapter of the American Institute of Architects, Seattle, announces that the chapter is to make a searching analysis of the conditions affecting the building arts and an exhaustive study for the purpose of suggesting improvements which will increase the efficiency and adequacy of architectural practice in Seattle and throughout the country. The investigation will be carried out by the chapter's post-war committee, headed by Mr. W. R. B. Wilcox. A tentative statement of the committee's conclusions follows:

It is the purpose of this committee to study and suggest improvements which will affect the conditions and increase the efficiency and adequacy of architectural practice throughout the United States. The desire is to make the study cover the whole country and to reach every qualified person practicing the profession of architecture, irrespective of whether or not that person be a member of one of the established professional organizations.

As a result of conditions preceding and consequent on the war, the practice of every vocation faces new conditions, and the time has come when each vocation must honestly appraise its true position.

The world is apparently searching for a way in which to make human relations more right—not in words, but in fact. The test of right relationship is being applied in a thousand ways.

The individual must appraise the value of the service he renders to his fellows, primarily through the measure by which the results achieved in the practice of his vocation are effective.

The experience of the war has bared the weaknesses of long established methods of performance until institutions of every kind, hitherto thought to be effective, have been found wanting. The conditions affecting the building arts, at this time, therefore not only suggest but demand that they be given the same searching analysis that is being given to every human activity, in order to bring it into right relationship with the new world in which we are to live.

In order that we may get the facts on which to base a forward-looking program for our vocation, we ask every architect to co-operate with all his heart and soul in the work of this committee. It is the idea of the committee that a digest of the opinions which it will receive from architects, either singly or through group discussion, will enable the committee to present a more adequate document for the detailed consideration of all architects, which will follow later.

The chapter has for some time been working on the question of a war memorial for the city of Seattle, and is co-operating with a joint committee of the Municipal League and the Seattle Fine Arts Society.

Brick Apartment House

At Sutter and Mason streets, San Francisco, Mr. Joseph Cahen, architect, and Mr. A. Town will spend $100,000 or more in constructing a six-story Class C brick apartment house.

Goes to France.

Mr. Charles E. Hodges, formerly of Hodges & Mitchell, San Francisco architects, recently sailed for France to engage in Red Cross work.

Personal

Lieut. Noble Newsom has resumed his architectural practice and temporarily is located with the George Friend Company, Thousand Oaks. Mr. Newsom is designing ten bungalows for Mr. Friend. Mr. Newsom's brother, Sidney, is still in the service in France.

Mr. E. L. Mayberry, architect and engineer, has reopened his office at 468 Pacific Electric building, Los Angeles. Mr. Mayberry was formerly associated with Llewellyn A. Parker in the firm of Mayberry & Parker.

Mr. John M. Cooper, architect, has moved his office from 635 to rooms 334-335 Marsh-Strong building, Los Angeles.

Messrs. S. A. Jubb and Frank Neitzel are in the East on special work for the Emergency Fleet Corporation.

Store Building

Mr. Smith O'Brien, architect in the Bankers Investment building, San Francisco, is preparing plans for a one-story and basement brick and concrete store building, 50 by 100, with foundations sufficiently strong to carry a second floor, and to be erected at Chowchilla, Fresno county, for Mr. Charles H. Kendrick of San Francisco. The estimated cost is $15,000.

Apartments and Garage.

Mr. Clay N. Burrell, Oakland architect, has opened offices in the First Trust building and is busy designing several large apartment houses and a brick and terra cotta commercial garage, 80x120 feet. The garage will be built on Broadway (Automobile Row) and will cost $16,000.

County Hospital

Mr. W. H. Toepke, architect in the Garfield building, San Francisco, has been commissioned to prepare plans for a new County Hospital for San Mateo county at a cost not to exceed $125,000. A site has been selected at Beresford.

Office Building

Mr. John Reid, Jr., First National Bank building, San Francisco, is preparing plans for a three-story Class A office building to be erected on California street, between Battery and Front streets, San Francisco, for the Rolph Navigation and Coal Company.

Workingmen's Hotel

A four-story brick workingmen's hotel is to be erected on the site of the Thomas Diggs building, on J street, Sacramento, from plans by Mr. F. A. S. Foale, architect, Ochsner building, Sacramento. Mr. Harvey Rassmussen, owner.

The Building Situation

"There are many and sufficient reasons why persons contemplating building should not delay starting their work," says Mr. Alfred W. Rea, Los Angeles architect.

"It is true the present level of prices is higher than prior to the war, but the increased cost of building is fully offset by the present low prices of real estate. The man who purchases a lot on the present market will save the additional cost of building as compared with pre-war prices. Building prices will stay at approximately the present level for a long time. There is nothing to encourage or sustain the belief that there will be any important reductions. Existing standards of wages cannot be lowered until the cost of living is materially reduced and transportation charges will also stay at the present level for a long time. So it will readily be seen that the advantage is with those who build now."

Dickey & Wood, Architects, Honolulu

Mr. C. W. Dickey, architect in the Oakland Bank of Savings building, Oakland, and Mr. Hart Wood, formerly of Wood & Simpson, have formed a partnership for Hawaiian work, with Honolulu offices in the Castle & Cooke building. Under date of April 4, Mr. Dickey writes The Architect and Engineer as follows:

I have good news to report. Hart Wood and I have formed a partnership for Hawaiian work and have landed the Bishop & Co. Bank building, which will cost about half a million dollars. We have also been commissioned to design two houses costing about $70,000 and $50,000 respectively. Besides this work I have the Castle & Cooke building in my own name, as I had the work before I came here last winter. It will cost about $300,000. Both jobs are one-story individual buildings, standing on opposite corners at Bishop and Merchants streets, Honolulu. They will be of Class A construction and faced with terra cotta.

I plan to leave for the Coast by the Manoa April 22nd, arriving April 29th, and will return by the Manoa June 6th, bringing three draughtsmen with me. I have not yet selected the men. Hart Wood will make Honolulu his home, but I shall spend part of my time here and part in Oakland.

I shall probably be able to give you pictures of the two buildings and preliminary plans when I get back.

Sincerely yours,
C. W. Dickey.

Frame Residence

Mr. H. M. Patterson, architect in the O. T. Johnson building, Los Angeles, is preparing plans for a two-story frame and plaster residence to be erected on West Seventh street, near Wilton Place, for Mr. D. Cohn. It will contain eight rooms and two bathrooms.

Alter Brewery Into Candy Factory

The Hagomann Brewery at Eighth and Harrison streets has been leased by the Riesenor Chocolate Co., a new concern, and alterations to the building are now under way from plans by Mr. E. A. Neumarkel, 1566 O'Farrell street.

Unique Red Cross Building

Mr. T. Paterson Ross, who has acquired a reputation among the architects and laymen of San Francisco as a designer of unique structures, has recently completed plans for a Red Cross hospital and recreation building, construction of which is now under way at the Presidio of San Francisco.

The building is designed in the form of a cross and walls are constructed of hollow tile, manufactured by the California Brick Company of Niles. The use of these hollow blocks is somewhat of an innovation for buildings of this type, but are said to have a number of advantages over other kinds of material in that the hollow space tends to keep the building dry and warm in the winter time and cool in the summer. Another advantage is that no lathing is required for plastering either out or inside, the cement being applied direct to the tile.

The building is 100 feet square. Two of the wings rise to a height of two stories. The ground floor has a recreation room, theatre, and dancing floor, while the second story has a number of dormitories for nurses. The building will cost complete $30,000. Similar buildings have been designed by Mr. Ross for Camp Fremont and Prescott, Arizona, and a contract has just been awarded for a fourth structure at Mare Island, Vallejo.

$60,000 Grammar School

Plans have been completed and bids have been taken by Mr. J. M. Saffell, architect of Bakersfield, for a $60,000 hollow tile grammar school at Wasco. The building will be equipped with the most up-to-date mechanical equipment, including steam heat with thermostat control, call bells, programme clocks, gongs and telephones.

Tannery Building

Plans have been prepared by Mr. James H. Humphreys, architect in the Wells Fargo building, San Francisco, for a five-story reinforced concrete tannery to be built at Benicia for Kullman, Salz & Company. The building will be 103x154 feet and will probably cost $60,000.

$350,000 Hebrew Orphanage

The selection of an architect will shortly be announced for a group of orphanage buildings of the one and two story semi-fireproof type, and to be built on Ocean avenue, near Westwood Park, San Francisco, for the Pacific Hebrew Asylum and Home Society. Judge M. C. Sloss is president of the board of directors.

PROSPECTS

This department is intended to assist architects and engineers in their search for possible clients. So far as known, no plans have been prepared for any of the work mentioned, at least not at the time of writing.—Editor.

INDUSTRIAL PLANT—Oakland.—Another new industrial plant for Oakland is assured with the sale of a large factory site at the foot of Eighty-second avenue to Mrs. Emma P. Harper and Mr. Leland Spencer of Seattle. Deal was closed by Mr. Fred T. Wood. Property consists of eighteen acres and improvements totaling $250,000 will be made.

COUNTRY HOME—Fresno.—Mr. C. W. Wood, Fresno Hotel, Fresno, has purchased over 300 acres on the banks of the San Joaquin river at the terminus of the Fresno Suburban line and with Dr. Charles Strub and associates will develop the property into homesites. Mr. Wood himself will build a costly country house on the acreage.

RESIDENCE — San Francisco.— Mr. Al Hanify of the Hanify Lumber Company, 24 Market street, San Francisco, has acquired a lot on the north side of Green street, between Broderick and Divisadero, upon which he intends to erect a residence shortly.

FACTORY PLANNED — Woodland, Yolo county.—Outside capital is said to be interested in the establishment of a tobacco factory in this city. Mr. James Chiflakos, Esparto producer, says that Mr. Alden Anderson, a Sacramento banker, and Mr. D. Wasserman, also of Sacramento, are interested.

APARTMENT HOUSE—San Francisco.—Mr. C. E. Savory and Mrs. Genevieve McMillan, 1540 Clay street, have purchased a lot on Sutter street, east of Jones. It is the intention of the owners to improve the property. In all probability a class C apartment building will be constructed.

PACKING HOUSE—Fowler.—Mr. C. E. Byde, local manager of the Associated Raisin Company's packing house, announces that the company will enlarge its packing plant with an addition 100x80 feet and three stories high.

LODGE BUILDING—Fresno.—Consolidation of the Fraternal Brotherhood local lodge No. 91 and the supreme lodge in Fresno was decided upon at a meeting at A. O. U. W. Hall. It is planned to erect a building.

NEW THEATRE — Stockton.— Mr. Leonard C. Dexter of the Ackerman & Harris Vaudeville Theatre in Stockton has announced that his company has under advisement plans for a new $100,000 theatre.

COUNTRY HOME—Palo Alto.—Mr. Fred C. Franks, American National Bank building, San Francisco, has purchased the Burke ranch of 260 acres, between Palo Alto and Portola, and will build a country home.

HOTEL ADDITION—Merced.— An annex is to be built this spring to the Hotel El Capitan, in the Yosemite Valley, Merced Hotel Co. owners. About 50 additional rooms will be provided.

APARTMENT HOUSE—San Francisco.—Messrs. W. R. Voorhies and Irwin Newman will build an apartment house on the south side of Bush street, 11 feet east of Jones, 54x137½ feet.

SCHOOL BONDS VOTED—Maricopa.—By a vote of 95 to 5, Paleto (Maricopa) school district voted bonds to the amount of $20,000 to remodel and add to the old school building.

MEMORIAL HALL—Palo Alto.— The students will erect a memorial hall on the Stanford University campus in memory of those who died in the recent world war.

$20,000 SCHOOL—King City.—Plans are under way for the erection of a new $20,000 schoolhouse for Greenfield, subject to a decision of the voters of the district.

$100,000 CHURCH—Fresno.—A new St. Paul's Church is planned. It is estimated that the new edifice will cost $75,000 or $100,000.

COUNTRY HOUSE—Oroville.—Mr. Grinnell Burt, olive packer of Oroville, will build an eight-room country house on his ranch near here.

TO ENLARGE PLANT—Watsonville.—The Loma Fruit Company is to install a new dryer and contemplates erecting a new packing house.

TOWN HALL—Woodland.—A number of prominent citizens are contemplating a new town hall building at Knights Landing.

BANK BUILDING — Winnemucca, Nevada.—George Wingfield is to build a new building to house the Churchill County Bank.

ORPHANAGE—San Francisco.—The Hebrew Orphanage Society will build a new orphanage near Westwood Park to cost $350,000.

AUDITORIUM — Kingsburg. — The Kingsburg Lyceum Corporation has been capitalized at $75,000, Mr. R. A. Catlin president.

LODGE BUILDING—Modesto.—The Moose will spend $100,000 on a five-story store, office and lodge building.

SCHOOLS—Livermore.—Bond election for a new school building is being discussed here and at Pleasanton.

TOWN HALL—Albany.—The trustees are considering ways and means to build a much-needed town hall.

Addition to the Phelan House

Plans are being prepared by Mr. C. E. Gottschalk, architect of San Francisco, for an addition, consisting of sleeping-rooms and connecting baths, to the country house of Senator James D. Phelan, near Saratoga, Santa Clara county.

Mr. Gottschalk has prepared plans for considerable store fixture and cabinet work, having no less than seven different commissions for this class of work that will involve an expenditure of close to $100,000.

Berkeley Votes School Bonds

The city of Berkeley will have at least three new school buildings (one of them a high school), together with some needed additions to existing structures, the people having voted some $2,300,000 for the improvements. There is much speculation as to who will be the architects of the new buildings. Present indications point to a division of the work among Messrs. C. H. Cheney, who is architect for the Board of Education; W. H. Ratcliff, city architect; James W. Plachek, president of the Chamber of Commerce, and John H. Thomas.

Six-Story Apartments

Mr. Herman Barth, architect in the Phelan building, is preparing plans for a six-story reinforced concrete apartment house which will have thirty apartments of two and three rooms each. It will be 60 by 57 feet and built in the downtown apartment house section of San Francisco.

Lodi Church

Mr. W. J. Wythe, Central Bank building, Oakland, is preparing plans for a $35,000 church for the First M. E. Society of Lodi.

Concrete Silos for Storage of Cement

The Old Mission Portland Cement Company, with general offices in the Mills building, San Francisco, Mr. J. A. McCarthy, manager, whose big warehouse at the San Juan plant was recently destroyed by fire, has let a contract to F. L. Smidth, contracting engineer of New York City, to design new buildings to replace those burned. Plans are practically completed and construction will start immediately. The company expects to have the most modern warehouse and storage bins on the Pacific Coast and to this end is sparing no expense. Instead of one long shed, 246x111, which was formerly in use, the warehouse will consist of two units of silos, four to a row, each silo being 65 feet in height and 25 feet in diameter. Elevated machinery will convey the finished product from the mill to the storage bins, which will have a total capacity of 60,000 barrels. Construction will be of concrete, steel and corrugated iron and as near fireproof as it is possible to make it.

The Old Mission Portland Cement Company is now supplying the State of California with cement for harbor and water front work.

Some Architect!

Architects will appreciate this modest eulogy from the country daily—the Colusa Sun:

> Nothing else was talked of last evening in Colusa but "Swank's new hotel." Jack Swank awoke this morning to find himself the most popular man in town.
>
> The architect is a local man. His name is J. S. Gould and he is a famous architect who was in business in San Francisco for fourteen years and won second prize for his plans for the new City Hall in San Francisco. He comes from an old Colusa family and his father is B. F. Gould, one of the proprietors of the famed Moulton ranch.
>
> Mr. Gould will have entire charge of the construction of the big new modern hotel and he will within a few days open offices here in Colusa.

$125,000 School Building

Mr. William H. Weeks, architect of San Francisco, has been commissioned to prepare plans for a school building for the Hollister Grammar School district at an estimated cost of $125,000. A bond election is to be held.

$75,000 Concrete Residence

Working drawings are being completed by Mr. Henry C. Smith for a $75,000 residence of concrete construction at Maple and Jackson streets, San Francisco, for Mr. J. H. Baxter.

Marine View Home, San Francisco

Mr. Charles Franzoi, 851 California street, will build a home on the northwest corner of Broadway and Octavia street, San Francisco.

State Forester Criticised for Misrepresenting Fire Resistance of California Redwood (Sequoia Sempervirens)

The redwood manufacturers of Northern California are up in arms because of an erroneous statement made in the 7th Biennial Report of the State Forester, in which he says: "Damage to the extent of a million dollars was done in a forest fire which swept southern Humboldt and northern Mendocino counties last August, burning redwood and fir trees three or four feet in diameter." Letters of strong protest have been sent to the State Forester asking that he take immediate steps to explain how such a gross misstatement of facts could have been incorporated in his annual report. The redwood manufacturers are backed by the Humboldt Chamber of Commerce, the Federated Chambers of Commerce and the California Redwood Association and have the support of every loyal Californian having the weal of his State at heart.

The particular part of the report to which exception is taken states that "the popular idea that redwood will not burn, however, was proven erroneous this summer when a severe fire in Humboldt county burned down trees three and four feet in diameter." The report further contains the contradictory statement that "redwood makes a good shingle wood because of its durability and the slowness with which it burns."

The damaging effect such a report would have on tourist traffic, investments in timber securities, and a leading industry of the State has roused intense indignation among the people of the State, who have sent communications to their representatives in the Legislature, now in session, to make searching inquiry into several bills now pending which would give the Forestry Department still further autocratic and arbitrary powers, also a substantial increase in salaries. They feel that if an added appropriation must be granted the Forestry Department, it should be used specifically in educating the officials of the department as to the peculiarities and properties of the California woods, especially the fire-resisting quality of redwood.

The official investigation has shown Chamber of Commerce, based on rigid investigation of facts concerning the alleged fire, shows that the actual damage done was in the neighborhood of $20,000, mostly to tanbark oak and young fir. In many cases the burned areas were benefited by the fire, which cleared the underbrush and left the property in good shape for grazing. The fact that no requests for lower assessments on this property for 1919 were made by property owners proves conclusively that the individual damage to redwood timber owners was nil.

The official investigation has shown that no sound, living redwood trees burned down. For half a century or more it has been the universal belief that fires would never sweep the redwood forests because redwood would not burn. That belief has now proven to be a fact because disinterested investigation and sworn testimony has established the truth of the lumbermen's statement that no redwood burned in this fire, which was reported as one of the worst of the year.

If further proof is wanted regarding the fire-resistant qualities of redwood standing timber, it is found in the fact that these forest giants have stood unscathed for the past two or three thousand years in a region where for centuries no fire regulations, Federal or State, were in effect. If further proof were necessary to show that redwood as a structural lumber is fire resistant, Californians point to the great conflagration in San Francisco, where that holocaust was stopped by a row of redwood buildings on Townsend street. The veriest tyro knows that redwood is free from pitch or resin and besides contains an acid which renders it practically impervious to fire or rot. It will be interesting to the lumber trade of the world to note the outcome of the controversy between the redwood lumber interests and the people of California with their State Forestry Department.

Fifth Liberty Bond Payments

Carter Glass, Secretary of the Treasury, has announced the dates upon which payments will be required on the notes of the Victory Liberty Loan as follows:

Ten per cent with application on or before May 10; 10 per cent on or before July 15; 20 per cent on or before August 12; 20 per cent on or before September 9; 20 per cent on or before October 7; 20 per cent on or before November 11, with accrued interest on deferred installments.

Payment in full can be made on May 20, the 10 per cent required with application having been duly paid on or before May 10. Payment can also be completed on any installment date with accrued interest.

Bakersfield Hotel

Report comes from Bakersfield that Messrs. H. J. Brandt, George Hay and other capitalists are preparing to build a $1,000,000 hotel there and that Fred W. Tegeler, a local hotel man, is to lease it.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Oregon Professional Engineers to Register

THE Oregon Legislature has passed an act to provide for the registration of professional engineers. In taking this step Oregon probably is the first State in the Union to enact a comprehensive law for the registration and regulation of the practice of professional engineering. The bill as introduced and passed is substantially the same as that provided by committees from the following national engineering societies:

American Society of Civil Engineers.

American Society of Mechanical Engineers.

American Institute of Electrical Engineers.

American Institute of Mining Engineers.

Society of Naval Architects and Marine Engineers.

American Institute of Consulting Engineers.

The bill defines the practice of professional engineering in such a manner as to embrace the civil, mechanical, electrical, mining, municipal, hydraulic and chemical engineers. In other words, professional engineering is defined as the design and supervision of public and private utilities, such as roads, bridges, highways, railroads, canals, harbors, river improvements, lighthouse, wet docks, drydocks, ships, barges, dredges, cranes, the design and the supervision of the construction of steam engines, turbines, internal combustion engines and other mechanical structures, electrical machinery and apparatus, works for the development, transmission or application of power, the design and supervision of mining operations, the design and supervision of construction of municipal works, irrigation works, water supply works, sewerage works, drainage works, industrial works, sanitary works, hydraulic or private utilities or works which require for their design or the supervision of their construction experience and mechanical knowledge.

It appears that before practicing engineering, an engineer must be registered by a board of nine members. This board is appointed by the Governor and shall consist of two civil engineers, two mechanical engineers, one electrical engineer, two hydraulic engineers and two mining engineers. The members of the board must be qualified professional engineers of at least ten years' active experience of recognized good standing in the profession and at least 35 years of age. Provision is made whereby the board may adopt such rules and regulations not in conflict with the act as may be necessary for the proper execution of the law. The members of the board shall serve without compensation except traveling and other necessary expenses. But there is a secretary who is paid a salary.

Provisions are also made whereby the registration of any engineer may be revoked by the board for misrepresentation either at the time of his registration or subsequent thereto, or for practicing fraud or deceit in the securing of his certificate or for the conviction of crime. This revocation, however, can only be made after charges have been preferred or filed by some person or corporation, or by the board on its own initiative. The time and place for a complete hearing is fixed by the board. A two-thirds vote is required of all the members of the board in order to revoke the registration of any professional engineer.

Any professional engineer who has practiced professional engineering for a period of six years and has had charge of engineering work as principal or assistant for at least one year, may be admitted by the board without examination before January 1, 1920. After that time a professional engineer may be only registered after filing a complete record of his experience with the necessary examination fee of $10 and taking an examination prescribed by the board. In lieu of the six years' experience, a college graduate may be examined after two years' actual practice. After a graduate has been examined and qualified, a certificate of registration will be issued to him on the payment of an additional fee of $5.00.

The board is required to examine the requirements of registration of professional engineers in other States in order to determine that the standards for other States are not lower than those provided for in the Oregon law. Provision is made, however, that any engineer coming from without this State and

possessing the qualifications for the practice of professional engineering as provided for in the act, shall be permitted to practice not to exceed three months before making application for an examination. This will allow consulting engineers from other States to practice for a period of three months without being registered.

Exceptions have been made to the following: Engineers working for the United States Government: architects practicing architecture; professional engineers employed as assistants to professional engineers registered under the act and professional engineers in the military service of the United States. For these engineers temporarily in the service of the United States, their service shall count as the practice of their profession and they shall be given one year's time from the date of their discharge in which to make application for registration without examination. The act also creates the engineer's registration fund into which all fees are paid. No appropriation is made from the general fund of the State, but the fund is self-sustaining by the registration fees.

It is specifically stated that the act will take effect on July 1, 1919, at which time the members of the board will begin to serve. Professional engineers, however, may continue practicing without being registered up to January 1, 1920.

Seattle Engineers Club

The Engineers Club of Seattle at a luncheon on March 6 was treated to a talk by Major William F. Allison, member of the American Society of Civil Engineers, on "The Work of the Sanitary Engineers with the American Army in France." Major Allison has recently returned from sixteen months spent in France as sanitary officer on special detail. He gave a very interesting account of his experiences. On March 20 Mr. Lloyd Robey, assistant superintendent of "The Chuquicamato Mine of Chile," addressed the club.

The Relations Between Engineers and Contractors*

By JOHN F. O'ROURKE

THE modern contractor is the man who, even in front of the modern engineer, would be entitled to membership in the American Society of Civil Engineers, because that organization says in order to be an associate of the American Society you must be able to make plans and build work and that you have had at least one year's experience in independent charge of work; to be a full member, which at the present time is restricted to people over 30 years of age, you must have had at least five years' experience in independent charge of work. Now where is there a contractor who belongs to what we call the educated class who can't fill that bill? So when I talk about the relations between engineers and contractors, I don't want the very beginning when it was easy. I mean is the man that makes the plans, and the contractor I mean is the man the engineer tells how to carry out the work, because that is what they did in the very beginning when it was easy. I am going to talk about the engineer and the contractor in the sense of the two parties to the contract.

There is first the owner and his representative, the engineer; and the engineer is to tell the contractor everything that the specifications say and everything that the plans mean, and if there is anything missing he can tell him a great deal more than anybody else can tell him that they mean. That is where we get down to what I am talking about now as the relation between the engineer and the contractor. The thing that appeals to many engineers that started a good many years ago, was the fact that in making their plans they had a great deal more trouble in having them carried out than if they did the work themselves.

There were others who were not engineers, but were fine men—men with

*From a speech at the organization meeting of the Associated General Contractors of America.

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a large business who were put up against the higher development of construction that they had never any experience of, because there was no experience in it. They associated engineers with themselves to enable them to carry out their work. Those engineers I am going to call the contractor's engineers. That is, the engineer whom the contractor employs and without whom he could not do his work, ordinarily, is the contractor's engineer. The engineer who became a contractor, I am going to call a contracting engineer. The owner's engineer is the one who makes the original plans.

What is the situation today in the relations of those people? In a certain society any man who is not working for some city or corporation, or who does not act as the engineer of the party of the first part, has no more voice in one of those national societies than if he were very obscure in the profession.

There are other branches of engineers who have gotten to the point that they have an office. They have hired an office and call themselves consulting engineers, and many of them, of course, are among the most eminent men in the world. But take them as a body. In their body, if one of them resigns his job as a consulting engineer, and looking for a consulting fee here and there, has a chance to do something real big and takes a part in the execution of a contract, his first duty to that organization is to resign—no longer is he eligible.

In all these cases there has grown up a feeling that if a man is an engineer and is not making the original plans (however shadowy they may be as to the final execution of them), unless he belongs to that party of the first part, he is not, strictly speaking, an engineer.

Now, as to the party of the first part—engineers, and the party of the second part—engineers. It is safe also to say that in one case they are so underpaid that I don't know any class of professional men who are so much the victims of the employers as the straight engineers in America. The other one is the fellow who comes in where there are four dimensions. A lot of people are greatly troubled to know where the fourth dimension is. Unless they are very poor indeed they've got it in their pocket.

Take length, breadth and thickness—from that you get quantity. Multiply that by this thing that you may have in your pocket as the fourth dimension, that applies really to the practical side of anything because you can't talk about building billion dollar way. You've got to get down to something that is practical; you've got to get down to something within the bounds of railroads or ten billion dollar courthouses or anything that reason, compared by the standards of the fourth dimension. Also you've got to get that fourth dimension in before you get any dimension at all on a contract as a contractor. You don't count if it is too large, and that's what I'm after.

The thing that I've got in my mind outside of the organization of this body, the making of an association in which all the contractors of the United States will get their rights made known and their power felt and their possibilities of going good—get that all in national dimensions both for buildings and builders of any other kind of a structure—I am getting after the engineers where they will get something and where among other things they will get out of their shell and come out and shake hands with the fellow that is showing them how the work is being done because most of them know nothing about it.

They are simply the products of the civil service which takes into view the capability of answering a lot of theoretical questions, most of which don't apply to engineering at all and which is one of the curses today of doing work for any body that is covered by civil service.

We have got to broaden ourselves; we have got to have contracts in which there will be something more than the statement that the engineer is the sole judge without providing any standard by which he can be judged as to his judging. We've got to make the contractors free in the sense that when they undertake to do anything and feel honestly that they are going to do it and that they are going to do it in the best and most efficient way, that they will be able to do that without having somebody that does not know anything at all about the work starting in to tell them how they shall do it wrong.

The only way this can be done is to make ourselves felt as a body of contractors, a body of contractors who (as my first definition states) are really a body of engineers. They are called contractors because they draw the thing together, not because they draw them. Note the difference. And we've got to have it so that whether a man is on one side or the other, it has got to be fully understood that there is a particular side that he is on and that they are all on, and that is the efficient, economical, rapid performance of the work. This is more to the owner than it is to the engineers of either side and it is more to the people in general than it is to the owner.

Engineers Inspect Concrete Shipyard

By a Staff Writer.

ON March 8 the members of the San Francisco Association of Members of the American Society of Civil Engineers made an inspection trip to the concrete shipyard on Government island in the Oakland estuary, near the 23rd street bridge. More than 100 members of the Association and their guests made the trip. Cards had been sent to all members of the American Society of Civil Engineers residing within the district, announcing the trip, and many responded, one man coming all the way from Merced. This is the first of a series of excursions that the local association intends to arrange during the coming season through its entertainment committee, which is composed of F. R. Muhs, chairman, H. D. Dewell and W. H. Popert. The next trip will probably be to Mare Island.

At the time the visit to the yard was made, concrete was being poured on the first of the two 7500-ton tankers now under construction. The concrete work on this vessel has since been completed, and pouring commenced on the second tanker. After the two tankers are launched, work will be started on a 7500-ton freighter, and this will complete the present program. The tankers are 420 feet long, 54-foot beam, and 30-foot molded depth. They will be fitted with the standard 2800-h. p. reciprocating engines of the Emergency Fleet Corporation. Each hull contains 2400 cubic yards concrete and 1600 tons of steel, or about six per cent average reinforcement, the proportion varying, of course, in different parts of the vessel. The work is being done for the Emergency Fleet Corporation by the San Francisco Shipbuilding Co., the concern that built the "Faith." The shipbuilding company is paid a fixed amount for superintending the work.

Probably the most notable feature of the construction is the use of an unusually light material for concrete aggregate, a sort of crushed brick manufactured especially for the work by the Los Angeles Pressed Brick Co. The essential features of its preparation are as follows: Clay is mixed with water and carbonaceous matter and the mixture subjected to a considerably greater heat than the ordinary brick-kiln. The gas generated permeates the entire mass and leaves it full of minute air-holes, but, as these are not connected, the material does not absorb water. The material, after being burnt, is crushed to a maximum dimension of three-eighths inch. The concrete is mixed with one part cement to two parts of aggregate. Concrete made in this way weighs 100 pounds per cubic foot, and develops a compressive strength after seven days ranging from 3000 to 4000 pounds per square inch. The maximum working stress in the ship is 750 pounds per square inch. The concrete, as already noted, is impervious to water. The minimum "cover" of concrete for the steel is three-quarters inch. The concrete is tamped with a pneumatic hammer, held against the forms.

The Emergency Fleet Corporation engineers have developed a simple method of testing the consistency of the concrete and proportion of water that should be useful on other concrete work. A hollow cylinder 6 inches in diameter and 12 inches high is filled with concrete as it comes from the mixer. The cylinder is immediately removed and the height of the cone after the mixture stops flowing gives a measure of the consistency of the concrete. This is usually spoken of in terms of "inches of drop." Thus if the 12-inch cylinder finally settled to a cone of 3 inches high, the "inches of drop" would be nine. Tests of this kind are made by the inspectors several times during the day without interrupting the work, or taking too much of the inspector's time.

Oregon to License Electrical Contractors

The Oregon Legislature during the session which recently closed passed a law which provides for the licensing of electrical contractors. The main provisions of the bill are as follows:

After July 1, 1919, every person installing electric wires must obtain a license to do so from the Commissioner of Labor and Inspector of Factories, which license costs an annual fee of $15 and must be renewed each year. In addition thereto, he must deposit with the Labor Commissioner an indemnity bond running to the State of Oregon in the sum of $500, which bond is for the purpose of securing parties for whom the said contractor is installing wires, against mechanic's liens and work installed in violation of a code, which code is a code to be prepared and approved by the Bureau of Standards, Washington, D. C. It provides for the printing and distribution of this code to the general public. It further provides that if any electrical contractor fails to register and pay his license fee that he is excluded from bringing or defending any suit in any of the courts of the State, and finally there is a penal clause making it a misdemeanor for persons to engage in the installation of electric wires without licensing, and upon conviction a fine of not more than $100 is assessable.

There is a saving clause in the bill, allowing owners of property to do and install their own work, providing the work is done upon their own distinctive property, also eliminating municipalities, power companies, telephone companies and the like in the construction of their own lines and apparatus.

Concrete Rice Mill

Plans are being prepared by Mr. Omer Denny, consulting engineer, 58 Sutter street, San Francisco, for a four-story reinforced concrete rice mill, 60x80, and warehouse 500x100, to be built at Colusa for Rosenberg Bros. The buildings are estimated to cost $250,000.

New Electrical Firm

The Browne-Langlais Electrical Construction Company, 213 Minna street, San Francisco, is the name of a new electrical contracting firm which plans to secure its share of the big business in store for San Francisco contractors during the next twelve months.

Both Mr. Browne and Mr. Langlais were formerly connected with the firm of John G. Sutton & Company (now the Scott Company) and more recently Mr. Browne has been associated with Mr. H. S. Tittle, contracting and manufacturing electrical engineer.

Announcement

The firm of Woods, Huddart & Gunn, 444 Market street, San Francisco, has been incorporated under the new name of Gunn, Carle & Co. The business will be conducted as heretofore, but on a broader scale.

In addition to iron and steel products, the company is prepared to furnish electric furnaces, cranes, industrial tracks, plant equipment and supplies.

Officers of the new company are: Mr. Chas. M. Gunn, president; Mr. Chas. W. Carle, vice-president; and Mr. E. H. Swing, secretary.

Wants Complete File

Eureka, Cal., March 19, 1919.

Editor The Architect and Engineer:

Having been absent in the "service" for the past year, am writing to request that you place my subscription again on your books. Also if possible please start the magazine so as to include the complete file, as I do not wish to have same broken. Therefore, I would appreciate a continuance of subscription and will be glad to forward check to cover as soon as you return your statement.

Have opened new offices in the Humboldt National Bank building, so kindly change the address on your mailing list. Although building conditions here do not seem to warrant optimistic views, it is a real relief to get back again to the familiar work, and I look forward to a period of at least normal activity as soon as peace terms may be signed.

Trusting that you will attend to the above matter at your early convenience, and that I will not lose back numbers on account of my absence, I remain,

Very truly yours,

F. T. Georgeson, Architect.

Nob Hill Residence

Plans are being prepared by Mr. Kenneth MacDonald, Jr., architect at 234 Pine street, San Francisco, for a splendid city home on the north side of Broadway, between Baker and Lyon streets, San Francisco, for Mr. B. F. Mackall of the Comyn, Mackall Company. The house is being designed in the Italian renaissance and will cost in the neighborhood of $60,000. The lot is an exceptionally fine one, having a marine view and covering an area of 77x275 feet.

Engineer Selected

The board of engineers investigating the settling of the grain elevator at Portland has selected Mr. Howard E. Holmes of San Francisco as the fifth member. Mr. Holmes is chief engineer of the San Francisco Drydock Company and consulting engineer for the Union Iron Works. The other members of the commission are: Messrs. Robert Cummings, George W. Boschke, George C. Mason and W. R. Phillips of Portland.

Goes East for Approval of Plans

Mr. J. R. Miller, architect in the Lick building, San Francisco, is in New York, where he went the early part of the month to submit plans to the home office of the Metropolitan Life Insurance Company for a $500,000 addition to the company's building at Stockton and California streets, San Francisco. The building is to be extended 140 feet along Stockton street to California, and two sub-basements are to be built.

Two Class A Theatres ..

Messrs. Reid Bros., architects in the California-Pacific building, San Francisco, are preparing working drawings for a $150,000 theatre for the Hihn Estate in Santa Cruz and a store and theatre building to cost a like amount for a client in San Rafael.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Subject of Accounting as Applied to the General Contractor*

By L. A. WEATHERWAX

THERE is perhaps no one subject to be considered during the so-called reconstruction period deserving of more careful and conscientious study than that of "Accounting" as applied to the details of the business of the general contractor. We have—all of us—evolved some system whereby we are able to say after a project is complete whether we have made or lost money. Some of us doing the larger class of work employ bookkeepers to give us this information. We are more concerned with the successful completion of some difficult piece of construction than we are with minor debits and credits—we feel secure in the fact that we are employing trained men to keep our books and consequently get out of touch with the many intimate details of the business. Others of us follow the old idea that whatever is left in the right hand trousers pocket when the job is complete and all the bills paid, represents the profit on the work. Still others of us take perhaps too much interest in the small details that had better be left to an employee and in that way lose sight of far more important subjects in a mass of detail. A happy combination of the three types would make for better office administration.

I venture to say that of the contractors present no two have the same method of accounting, one man has a very pretty double-entry system that nobody can understand except the man who keeps the books, while the next man has his books on the back of an envelope in his inside pocket—the third man don't keep books at all. This wide divergence in the matter of accounting, together with a similar lack of co-ordination in the matter of estimating and cost-keeping, is responsible, in great measure, for the wide divergence noted at almost every opening of bids. It is partially responsible for the feeling of distrust engendered in the minds of the banker and bondsman—the very people without whom we cannot do business, be it large or small—when we go to them for a legitimate business loan or require a bond. A wide difference in the method or rather lack of method in accounting, estimating and cost-keeping is again responsible for the feeling in the mind of the general public that the extremely low bid is the correct bid and all the other bidders are robbers. We must also combat the idea in the public mind that was originally conceived in the mind of the cartoonist—that of the contractor with his pockets stuffed full of juicy contracts—a wide expanse of vest—big, fat, jolly, rolling in opulence. Gentlemen, we are distrusted by every-

*Paper delivered before Northwest Master Builders Convention at Seattle, February 20, 1919, and printed in Pacific Builder and Engineer.

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body—our banker thinks we are gambling—our bondsman thinks we are padding our assets and the architect and owner think we are combined to take excessive profits from our work, when as a general rule when we go to our banker for a loan, it is in most cases a legitimate requirement of our business. When we make application for a bond, we are generally entitled to instant consideration, our ratio of assets to liabilities is a proper one, and as far as collusion goes in the matter of bidding, we all know we would at least keep from writing losses into our contracts if we could only trust each other and get together in an attempt to arrive at a fair and reasonable price for our work.

You hear the word reconstruction applied to every conceivable subject these days until perhaps the real significance is lost to us as individuals—we think of it as that intangible Aladdin's Lamp, the very touch of which will make things right again and forget that we as individuals and as a class are just as much in need of a thorough sweeping away of the accumulated cobwebs of years as the other fellow or the other business, and one of the prime requisites towards stabilizing our business and acquiring our "Place in the Sun" is that very thing—an almost imperative need for more similarity in our method of doing business and by similarity I do not mean that our individuality shall be submerged in a set of stock rules and regulations governing our associations among ourselves and with the public at large.

For our own good as well as a means of raising us in the estimation of our fellow citizens let us devise some general scheme of accounting which will at once be capable of expansion to care for the needs of the largest operator as well as for the man whose limited capital necessitates the accepting of smaller contracts. With two or three exceptions we are all operating on a capital invested of not to exceed a hundred thousand dollars and it should not be a serious matter to devise some standard guide by which we could all work, varying details to suit our individual requirements, and the time is not far distant when either we shall have to take steps towards some such standard form of accounting or our government will do it for us.

We are facing at least several years of high income taxes, capital stock taxes, surplus profits taxes, and the host of other necessary governmental taxes collected from us directly instead of indirectly as heretofore. These taxes are collectable at stated intervals, the returns must be made by a certain day or we get a neat little message from the internal revenue office to the effect that they will consider a check for ten dollars or a hundred dollars as an offer of settlement by reason of our failure to make the return within the required time. I think perhaps many of you have had that same experience. Other businesses are able to make their returns on time, why not us—merely because we have not paid enough attention to the accounting end of our business. Do you know that the lumbermen spent some hundreds of thousands of dollars in an effort to standardize their accounting and cost records so that they could "account" to the Government for every item entering into the manufacture of lumber of all grades and thus convince the Government that they were not profiteering? You have noted that lumber prices have been pretty much the same as between different mills. It is not because they have gotten together and said that such and such a price shall be charged, but primarily because they have a standard system of cost-keeping and accounting which shows them that it is costing them approximately the same to manufacture and market their product—allowing of course for rail facilities, stock on hand, etc. They have found that some such system was absolutely necessary in order that they might put themselves right with the public—and some such system is just

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as urgently needed by the contractor for his business.

Then again we are harassed periodically by the State in the collection and reporting of contributions to the industrial insurance and medical aid funds, while in States having no such laws we are forced to carry liability insurance, our pay-rolls subject at stated intervals to audit by State or private officials. A five minutes' talk with one of the auditors for the State Industrial Insurance Commission would convince you that the contractor, generally speaking, has very little idea of accounting. The very provisions of the laws as regards the percentage of contribution are supposedly based upon the percentage of accident in the different trades employed in the construction of a building, consequently we are required to make at least some segregation of our payrolls, at least as between laborers, carpenters, roofers, painters, etc., each of whom have different accident ratios, consequently different premium rates per dollar. Some of us have a daily report system, very complete and also very costly—kept by the foreman who in the rush on the job generally forgets all about the report until night—then puts down something to satisfy the office—sometimes correct, but ofttimes not. On large operations justifying the employment of time clerk and cost clerk combined the tendency is to go into too much detail and swamp the "accounting" office with a mass of detail and costs which are carefully worked up and then forgotten. It is not the purpose of my talk this evening to go into the subject of cost-keeping except to point out that as regards labor costs, the States are making it necessary for us to keep such records more or less carefully segregated and the time is coming when the State will demand more uniformity in the matter of keeping the records of the different branches of labor employed by us.

The very fact that our fellow citizens as well as our Government and our State have a financial interest in our business in the collection and reporting of various forms of tax should bring to each of us the necessity for a general similarity in our methods of keeping our accounts—at the same time we each have our pet method which to us may answer admirably the requirements of our business, but when the Government or State comes around and asks for certain financial reports there is a wild scrambling, burning of midnight oil, etc., in a desperate effort to pick out from our accounts the information needed. We each of us may be satisfied that our system is the best one and perhaps it is, but our colleagues have no knowledge of it, so no one is benefited but

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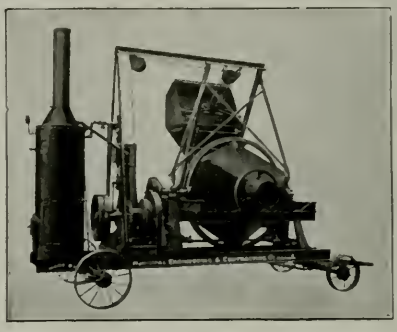

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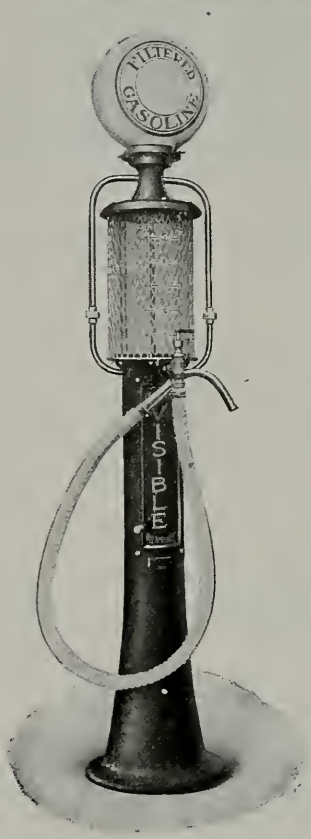
ourselves, and following that rule of "The greatest good for the greatest number" we should be glad to confer with one another in an effort to assemble all available information on the subject, sift it, correlate it, reject here, add there, and finally evolve a standard system which, while it may not exactly fit your business without minor changes, will on the whole have the advantage of uniformity, enable our banker to say at a glance that we are entitled to that loan, our bondsman to say "Yes, we'll write that bond," and the dear old public to feel that the term contractor is synonymous with business honor, integrity, and confidence in the same way the merchant, the banker or plain business man is spoken of and thought of.

Periodically we are asked by Dun or Bradstreet to furnish them with a statement of our assets and liabilities, generally accompanying the request with one of their printed forms which those of you who have had that experience will know is adapted to the ordinary manufacturer, merchant—any business but that of the general contractor. We wrestle with their form and finally give them something to satisfy them, either on their form or one we have pounded out in haste for ourselves. The result is generally not very illuminating either to them or to us, and leads us into a false sense of financial values.

The same is true of many banks. When a customer goes to his banker for a loan, unless he has adequate collateral, the first thing requested of him as a prerequisite to any consideration of his application for accommodation is a financial statement showing in tabulated form his net worth. All of us use or should use our bank as our financial adviser and counsellor, and in the line of credit allowed us by our bank we find an answer to what our bank thinks of us as financial risks. We all know that banks generally are not overly anxious for the contractor's business for several reasons. The average contractor by the very nature of his business cannot keep large average balances. He makes relatively few deposits and writes hundreds of checks, making work for the bank's bookkeepers, on top of this the very nature of his business again tends toward unconscious inflation of his net worth, especially where several operations dovetail one into the other. We must make our banker our confidant, must instill a feeling of confidence in him, and one of the first ways of establishing such relations is by means of a monthly balance sheet, using care to see that for comparative purposes it is always on the same form, and for the betterment of the profession as a whole why is it not logical to devise a stand-



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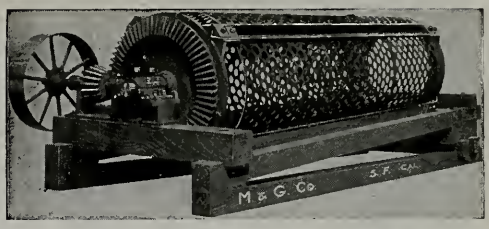
ard form of balance sheet for the use of all contractors? Such a form could easily be prepared when the monthly trial balance is taken and should the contractors as a class voluntarily on the first of each month mail to their bank and to their bondsman a copy of their balance sheet it would go a long way towards procuring for us as a whole the good will and confidence of the very people we must conciliate, to say nothing of the great good to our credit among supply houses who universally use the services of Dun and Bradstreet in an effort to keep a line on the financial responsibility of the general contractor.

So you see, gentlemen, we cannot do without a more or less complete system of accounting—some system whereby, primarily, we ourselves are enabled to know as nearly as may be just what condition our business is in—a system that will really show to the bondsman—the banker—Dun and Bradstreet—the Government—the State—and, in fact, every one to whom we are required to furnish such information, that our business is carried on a firm financial foundation, entitling us to the courteous consideration accorded other businesses. Let us as members of an association comprising the Northwestern States devise a standard payroll sheet, preferably loose leaf, which will provide for medical aid and insurance tabulations as well as private cost records, band reconcilements, etc. Let us devise a check register for handling our general account, which will enable us to segregate our payments to the different operations without the necessity of first running all accounts through a bulky journal. Let us devise a uniform balance sheet to be used for the information of those entitled to have such information. Then let us all use them, go to our bank and our bondsmen and say: Gentlemen, hereafter you will receive a copy of our balance sheet each month on this form that you may know as well as we just what our business is doing.

I cannot hammer home too strongly the fact that as a class we are considered shaky financially, and if we are to make these people know that we are substantial we must take steps to convince them that we are going to do business along proper lines, and what better way than to be able to say that we, too, have had our "house cleaning" —that we, too, by our very determination, are going to demand that we be considered as business men and then back up our assertion with vital information in the proper place. In this way, gentlemen, will we pave the way for better business, better credit and better associations with those upon whom we are dependent.



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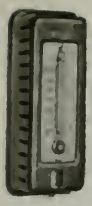

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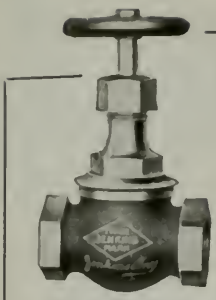

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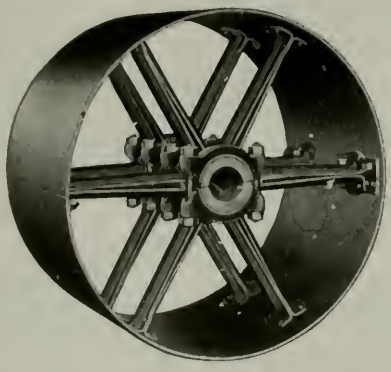

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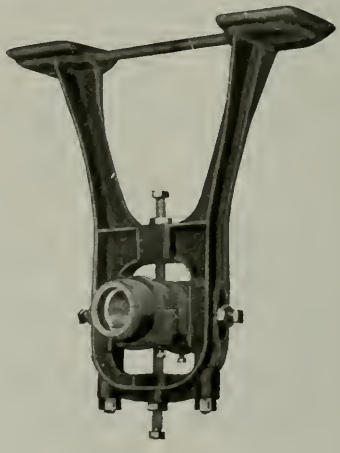

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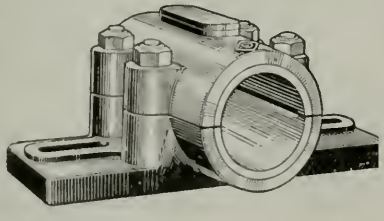

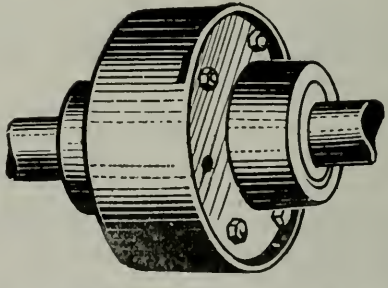

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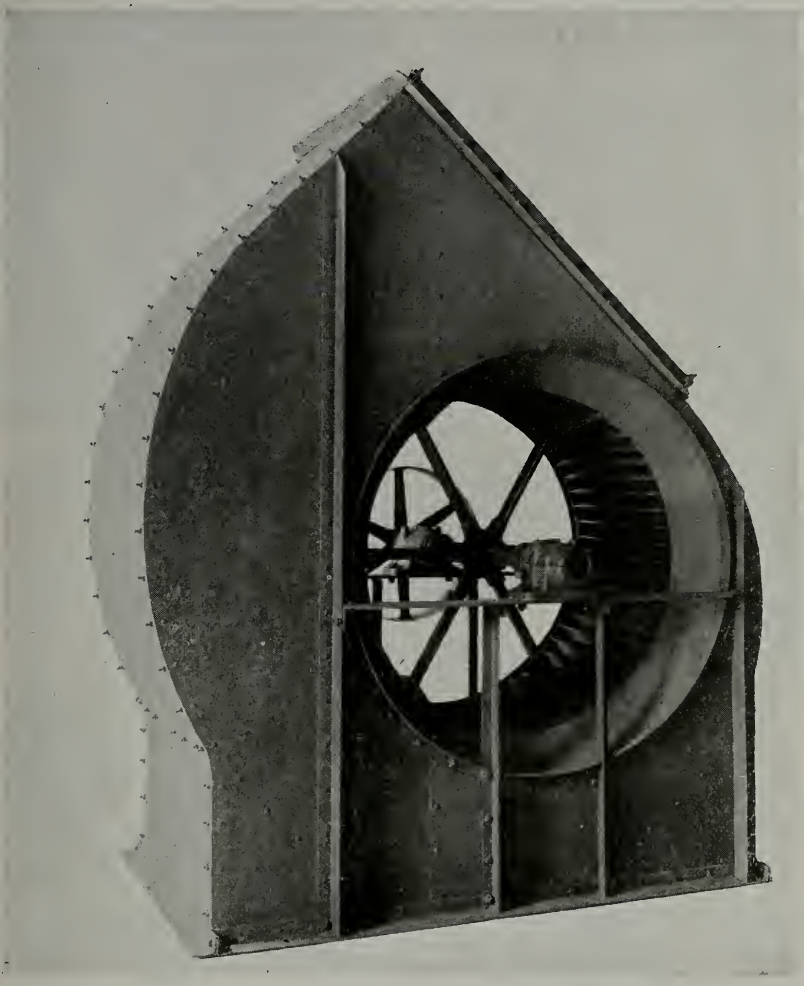

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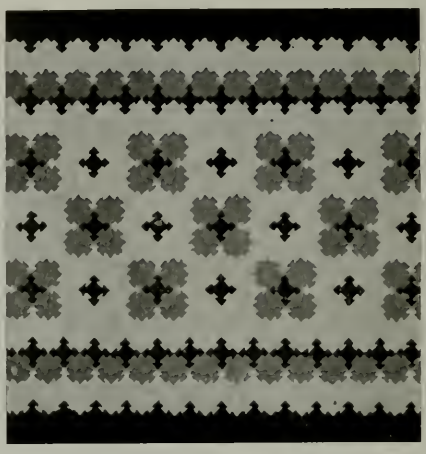

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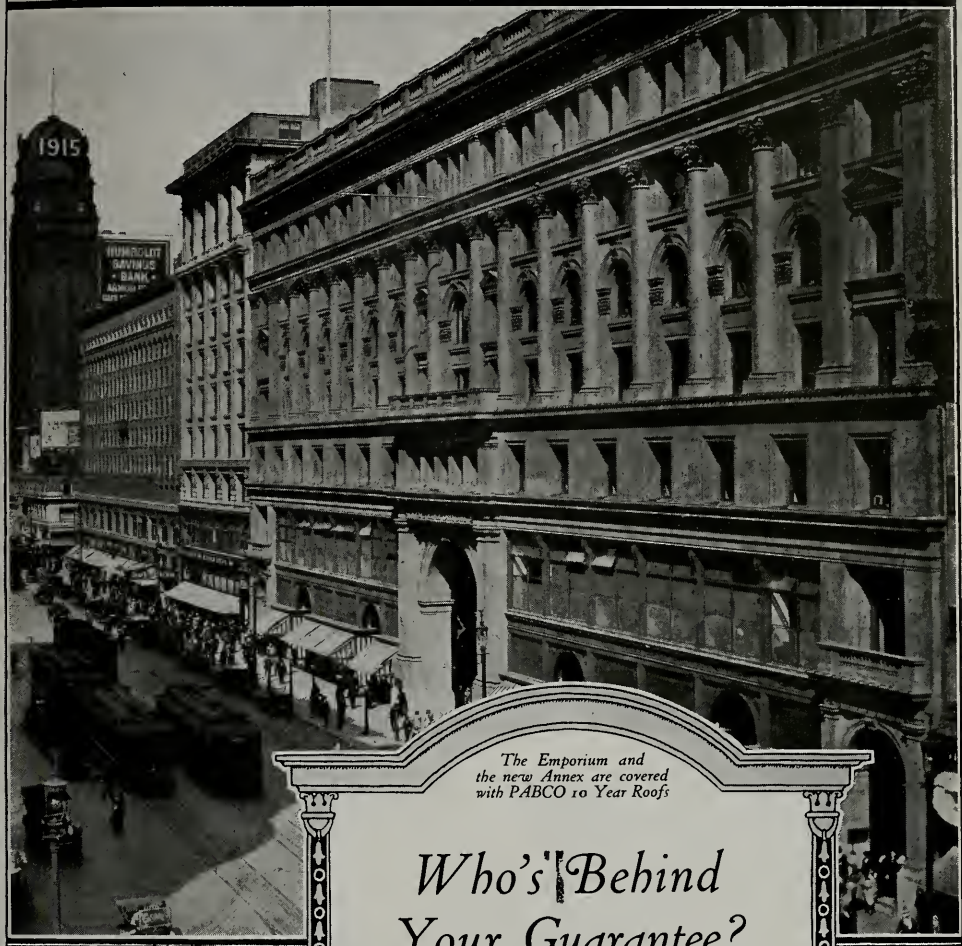

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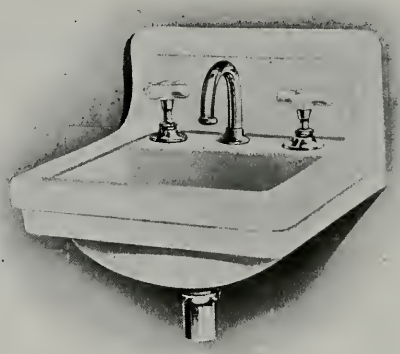

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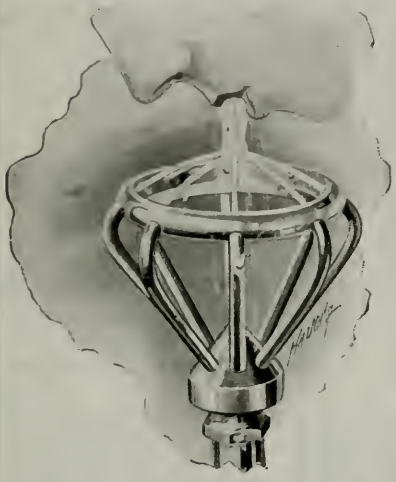

Showing the Hajoca No. 17 Drinking Fountain in operation. Note the lips come in contact with nothing but the jet of running water.

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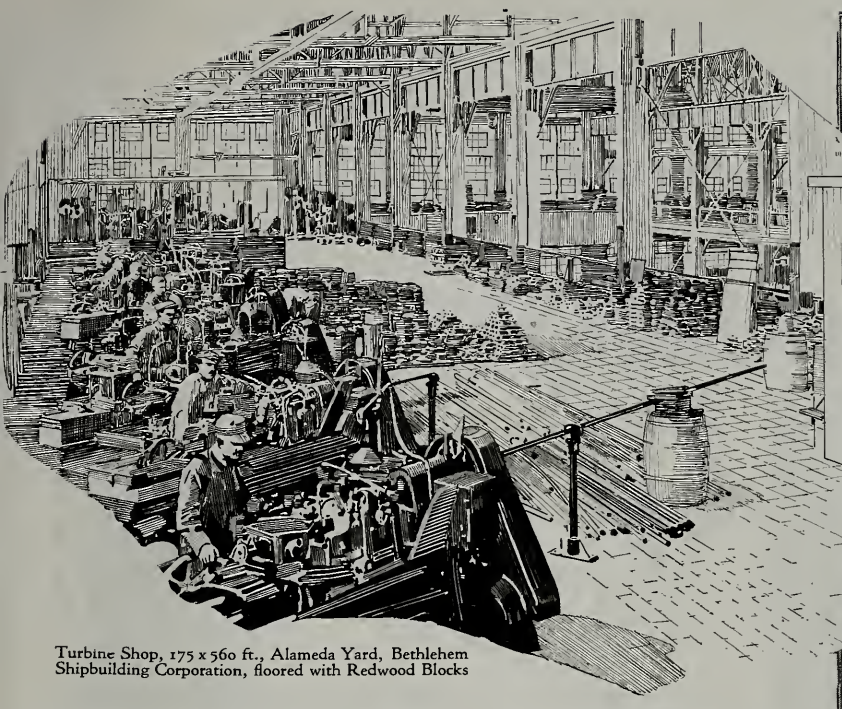

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Monson Bros., 1907 Bryant St., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.

CONTRACTORS' MACHINERY
Harron, Rickard & McCone, Townsend St., San Francisco.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CORK TILING, FLOORING, ETC.
Be-ver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK
California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 530 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Geo. A. Sittman, 21 Beale St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

FANS AND BLOWERS
John Ringius, 252 Townsend St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
General Fire Extinguisher Company, 453 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

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FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.
Oak Flooring Manufacturers' Association, 1014 Ashland Block, Chicago.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

HEATING AND VENTILATING (Continued)
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralph Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Trussed Kahn Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Strahle Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

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American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
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Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
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OIL BURNERS
- American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL FILTERING AND CIRCULATING SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

PAINTING, TINTING, ETC.
- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- Aspromet Company, Hobart Bldg., San Francisco.
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.

PAINTS, OILS, ETC.—Continued
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
- U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 180 Jessie St., San Francisco.

PLUMBING CONTRACTORS
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettish, 365 Fell street, San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.

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Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
PUMPS
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.
REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.
ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.
ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Aspromet Company, Hobart Bldg., San Francisco
RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.
SAFETY TREADS
Pacific Building Materials Co., 525 Market St., San Francisco.
SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.
SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.
SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.
SHINGLE STAINS
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francisco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
SKYLIGHTS
Aspromet Company, Hobart Bldg., San Francisco
STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.
STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.
STEEL PRESERVATIVES
W. P. Fuller Co., all principal Coast cities.
The Paraffine Companies, Inc., 34 First St., San Francisco.
STEEL REINFORCING
Badt & Fisher, Nevada Bank Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Trussed Kahn Steel Co., Tenth St., near Bryant, San Francisco.
STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
STEEL SASH
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
Bayley-Springfield solid steel cash, sold by Pacific Building Materials Co., 525 Market St., San Francisco.
STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.
STONE
California Granite Co., Gen. Contractors' Ass'n. San Francisco.
McGilvray Stone Company, 634 Townsend St., San Francisco.
Raymond Granite Company, 1 and 3 Potrero St., San Francisco.
STORE FRONTS
Fuller & Goepp, 34 Davis St., San Francisco.
SUMP AND BILGE PUMPS
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TELEPHONE AND ELECTRIC EQUIPMENT
Bittmann & Battee, 84 Second St., San Francisco.
Direct Line Telephone Co., 320 Market St., San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

THERMOSTATS FOR HEAT REGULATION
Johnson Service, Rialto Bldg., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

TRANSMISSION MACHINERY
Meese & Gottfried Co., San Francisco, Los Angeles and Portland.
P. H. Reardon,57 First St., San Francisco.

VACUUM CLEANERS
United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

VALVES—PIPES AND FITTINGS
Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
General Fire Extinguisher Co., 453 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATORS
Aspromet Company, Hobart Bldg., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.
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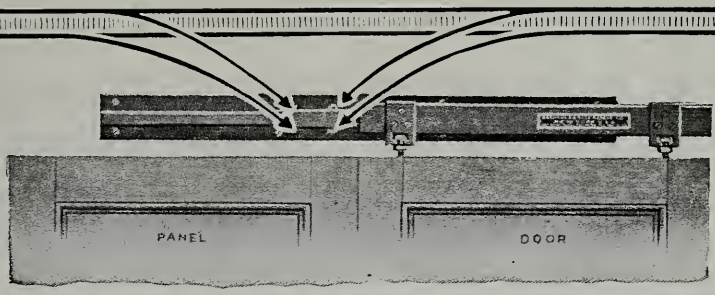

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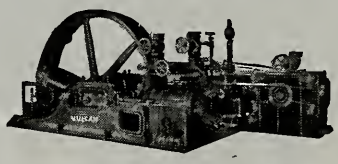

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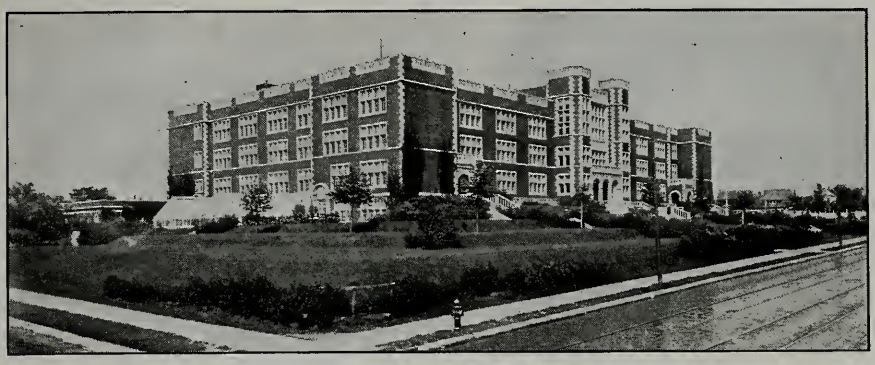

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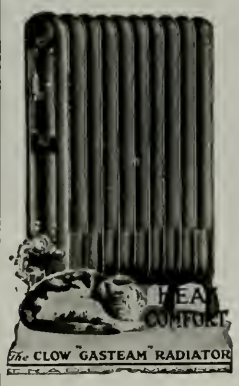

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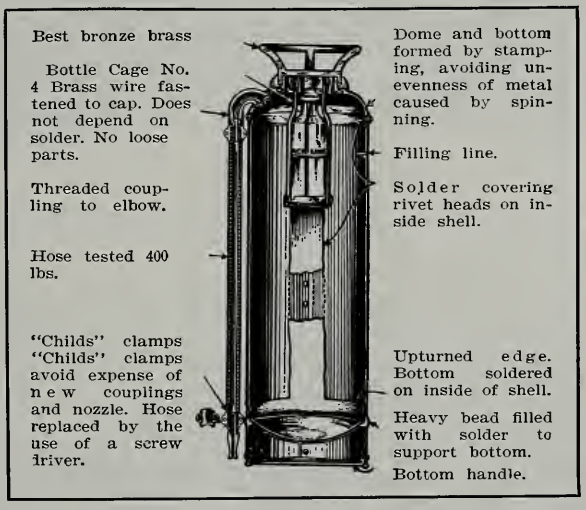
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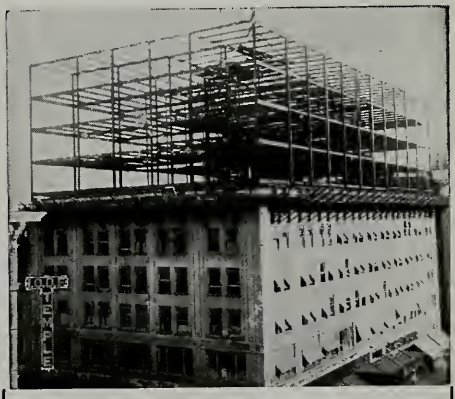

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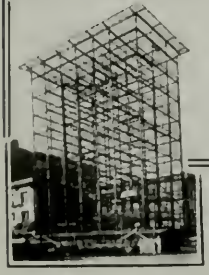

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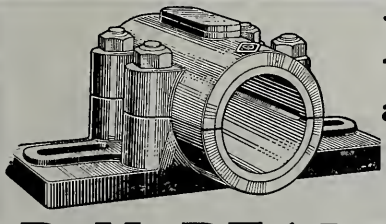

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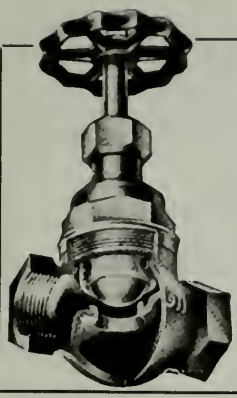

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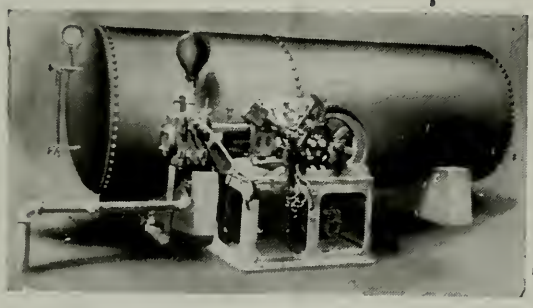

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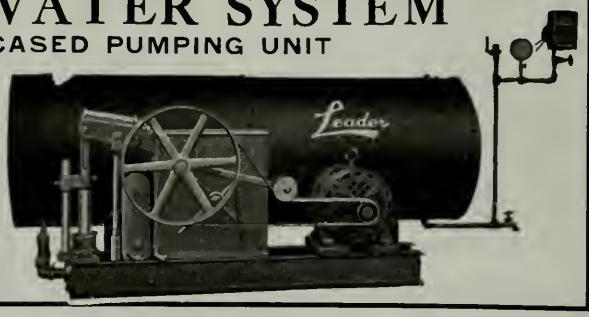

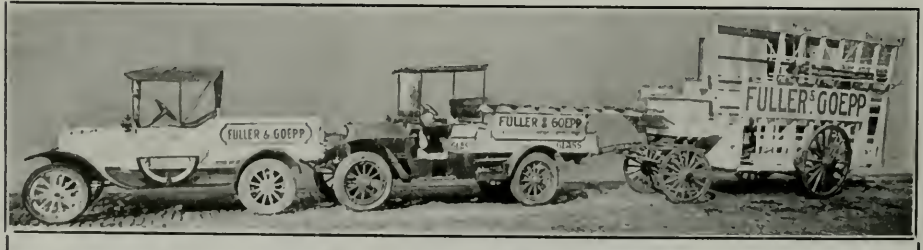

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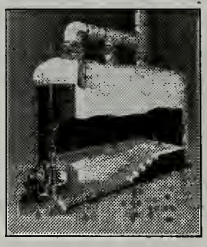
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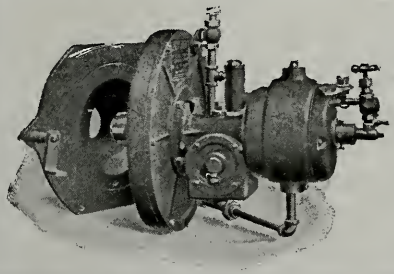

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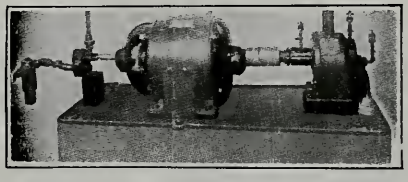

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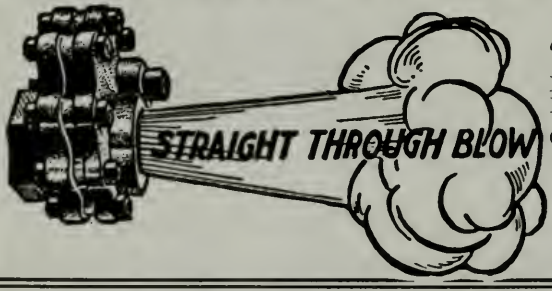

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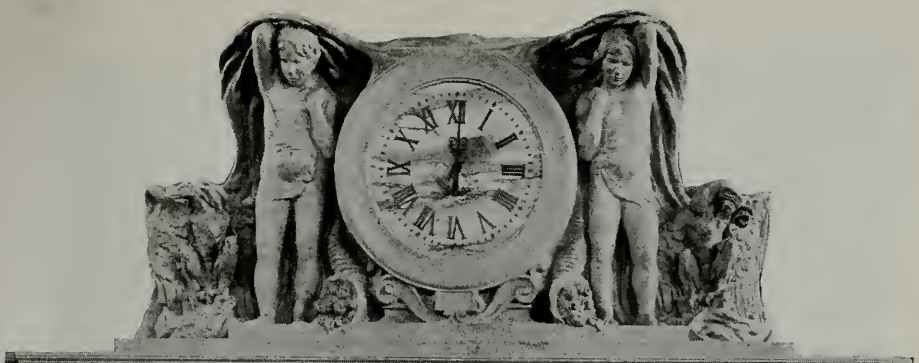

The Architect and Engineer

Volume LVII. OF CALIFORNIA Number 2.

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THE
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OF CALIFORNIA

MAY, 1919 Vol. LVII. No. 2

An Architect's Home in Alameda County

By GEORGE E. McCREA

IT was a poor Indian who could not pick a better site for his home than a white man could.

I realized this several years ago, when a large piece of property in the hills section of Oakland, California, came into my possession. The property embraced an old Red Man's camp, and was secluded and almost buried from observation by enveloping hills. But closer acquaintance disclosed that it had a sweep of view westward to the Golden Gate, southward to San Jose, northward to far off Mount Tamalpais.

From his unseen and unseeable wickiup here the Red Man commanded the entire landscape in every direction. He could make his morning genuflexions to the rising sun as it tipped the hills to the east and to the setting of the same astral deity as it died away in the gold and purple of the Pacific. His outposts and sentinels could sight the approaching enemy and the camp could rally for defense, hours before an attack could possibly be begun.

Evidently, the padres, in the days when they mingled with the California Indians, thought the Red Man had chosen wisely; for, here on this same site, they built a chapel, and from this site carried on some of their early intercourse with the aborigines.

I found relics both of the Indian and of the padre when I took the property; relics of the Spanish settler who builded the old two-room cabin still standing and planted most of the splendid trees with which it is embowered. Rock-bordered, moss-grown, serpentine walks; water courses drawn from undying springs; Spanish civilization, in fact, gone to seed on ground where a still earlier and perhaps nobler life had already perished.

The whole place was a revelation in the choosing of building sites. Therefore, when I tackled the problem of re-making what was left, I should have been a poor architect, indeed, if I had not tried to live up to the vision of the first owners.

FRONT VIEW, FROM DRIVE, COUNTRY HOUSE OF MR. GEO. E. McCREA
Geo. E. McCrea, Architect

GARDEN VIEW, COUNTRY HOUSE OF MR. GEO. E. McCREA,
NEAR OAKLAND, CALIFORNIA

There was nothing to work on save a row of rectangular old buildings, one of them the padre's chapel plastered with adobe, another a two-room portable house, a third a two-room cabin which antedated the chapel, and another a house which had been used by a branch of the old Peralta family, who had been granted this tract and many surrounding acres by the King of Spain in 1804.

The house was rectangular in form, with a hall, 3½ feet wide, running through the center, with three rooms, each about 11x13 feet, on either side. There were no baths, no closets, no plumbing.

The whole row of buildings stretched along a ridge, in beautiful position to command the wonderful vista which the Indians had known so well how to select. East and west the ridge dropped steeply, and, at first glance, there seemed to be little for a landscape architect to work upon. But there was the view and the fine old trees, and there was the marvelous invitation to devise some kind of a habitat from that crude nucleus that would enable a comfort-loving modern mortal to enjoy the morning and the evening sun in his own modern way, to look out in peaceful repose to the far-away San Jose, to Tamalpais, to Twin Peaks, to the Golden Gate, and to feel himself the undisputed and indisputable proprietor of a joy which was all his own and which none could take away from him save by the orderly processes of Twentieth Century law.

So I began to build both house and landscape. Westward, where the vista was toward the Golden Gate, I had the land leveled down into an oval forecourt. One side of the oval I enclosed with a lattice fence, broken, midway, by an open settee and summer house. The other end of the oval defined by an irregular row of lilacs led down by a gradual slope into a wider lawn, which opened into a Japanese garden.

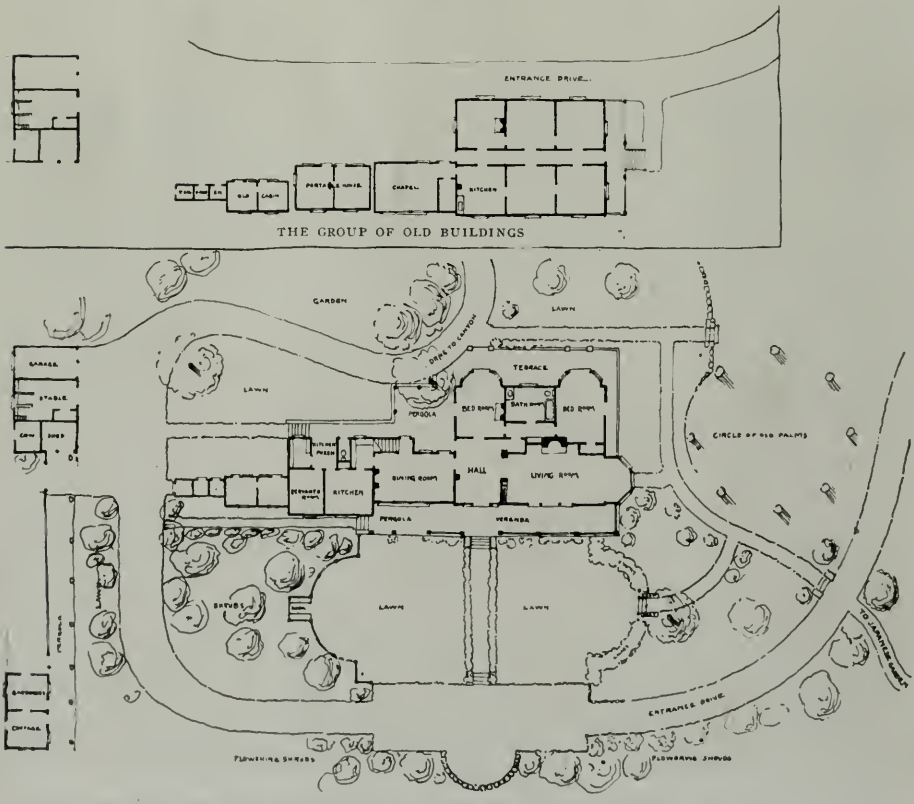
The main entrance of the house was placed to give a direct, arrow-vista of the Golden Gate. A wide veranda was run along the west side of the house and vines were so trained over the supports and columns as to give enticing glimpses and pictures of the same wonderful western scene. A beautiful old pink wistaria suggested a pergola extending from the end of the veranda northward across the side of the old chapel where its long clusters would fall gracefully, but only in such way as to afford a shade, without obstructing the view.

Then the house; obviously, it had to be a windowed house, with everything in it bearing upon the exceptional attributes of the landscape. So I kept it long and comparatively narrow, with plenty of light out toward the west, and, as we shall see also to have been necessary, with similar abundance of light toward the east. I moved the two-room portable house entirely out of the picture, because it did not seem to belong there, and placed it in another part of the grounds to be used as servants' quarters, and concentrated attention on the old chapel and the old house. The chapel I retained, almost as it was, converting it into a dining room, with broad windows on either side.

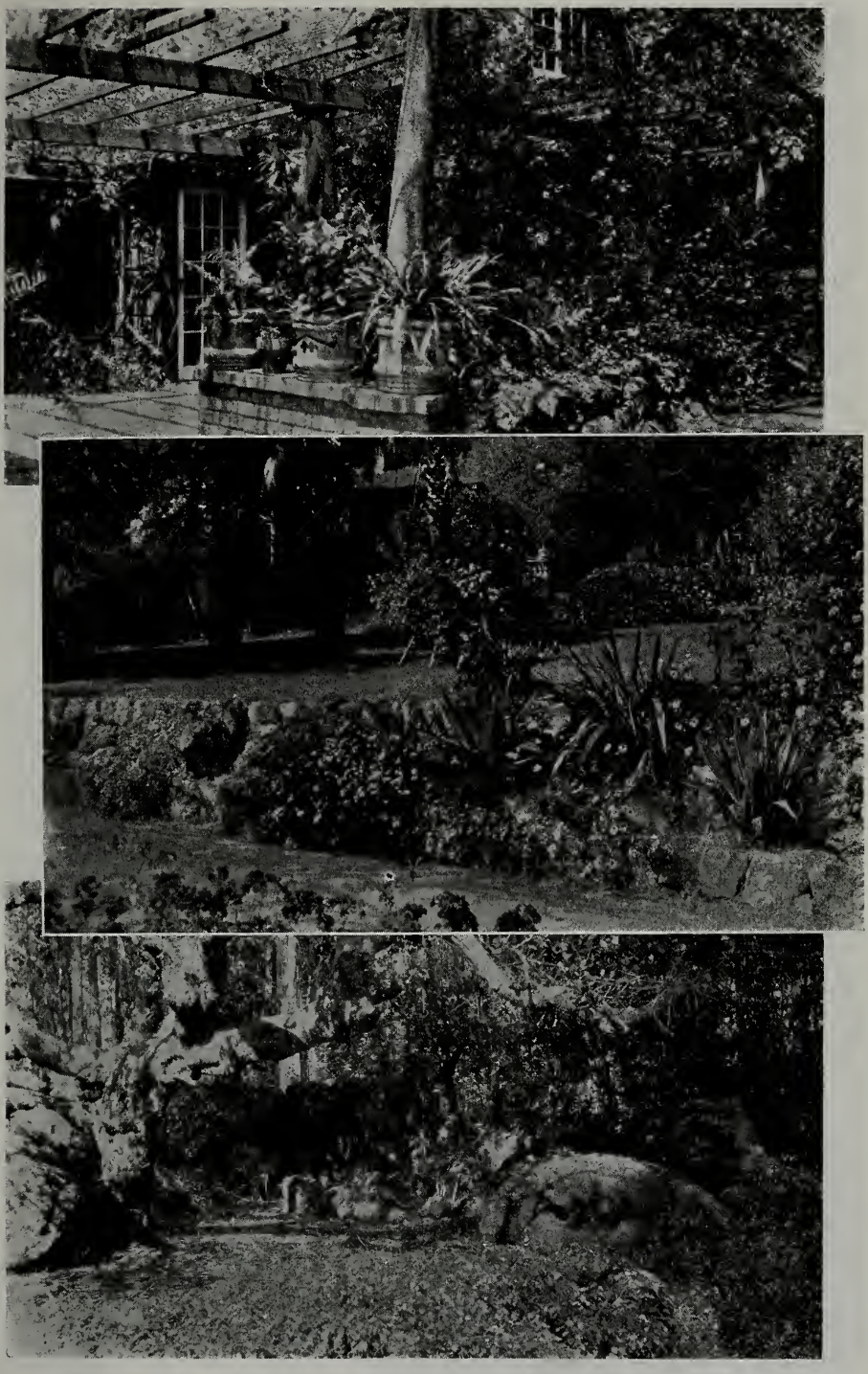
Where the portable house had stood, directly north of the chapel, I built a kitchen with a guest room over it. The guest room has a fireplace, bathroom, closets, etc. From the west side the view of the Golden Gate was superb, and a window on the east side caught the morning sun through the tree tops. Due provision, of course, was made for an entrance to this chamber which should not be connected with the kitchen in any way, and the walls and drafts were so adjusted as to prevent the unpleasant smell of cooking from passing upward. The fireplace was connected with the same chimney as served for the range in the kitchen, and the fireplace in the dining room.

South of the dining room lay the old house with its center hall and three rooms on each side. The first room on the western side I used for an entrance

ENTRANCE, COUNTRY HOUSE OF MR. GEO. E. McCREA
Geo. E. McCrea, Architect



PLOT PLAN, SHOWING BUILDINGS BEFORE AND AFTER ARCHITECTURAL TREATMENT
Geo. E. McCrea, Architect



PORCH AND GARDEN VIEWS, COUNTRY HOUSE OF MR. GEO. E. McCREA. LOWER VIEW SHOWS OLD INDIAN CAMP SHELTERED BY LIVE OAKS

INTERIORS, COUNTRY HOUSE OF MR. GEO. E. McCREA
GEO. E. McCREA, ARCHITECT

BED ROOM
FURNITURE
DESIGNED BY
THE ARCHITECT.

LOOKING INTO
GARDEN FROM
BED ROOM.

GUEST ROOM, COUNTRY HOUSE OF MR. GEO. E. McCREA

hall and the other two with a portion of the old central hall for a living room, adding a wide bay window to the southern end.

I converted the three east bedrooms into two bedrooms and a bath, and ran a brick-paved terrace along the entire eastern side. To each bedroom I added a bay window with French windows opening directly onto the terrace.

Under the old house I excavated a basement and installed a hot-air furnace.

The land on the eastern front was already planted with all manner of Californian and imported flowers and with some fruit trees. I leveled it somewhat and planted a lawn between the trees and shrubs and built a grape arbor along its eastern border with seats, tea tables, hammocks, etc. There is always a cool breeze blowing in this spot, making it a haven on a hot day.

Next came the working out—perhaps it might be called the restoration of the grounds that lay beyond the house. There were twenty acres of these grounds with a deep, wooded canyon sloping downward through the center. The former owners had impounded the waters of this canyon in a lake and had built an artificial island in the midst of the lake and planted the traditional palm on it. An owner who had succeeded the Peraltas was a tree worshipper and had many friends among seafaring men who manifested their friendship by bringing him strange trees from all parts of the world. Such of these as would survive in California are still growing. It was a matter of natural development to revive the lake, bring the fading trees back to their old glory, and then to erect at the side of the lake a fitting summer house.

Winding upward from the lake were walks,—how old, I could not guess, for they probably had their origin in the water-trails of the original Red Men—and these I rebuilt, making inviting passages up to the plateau where the Indians had their council-fire and cookery. The latter was a wonderful spot, indeed, huge rocks under an ancient oak meeting in an overhanging canopy hollowed by the fires of the Indians for centuries, and with innumerable other rocks clustering about the central pile which had afforded place after place for mortars where the acorn flour was ground.

This spot I decided to leave as the Red Men had left it.

GRAPE ARBOR, COUNTRY HOUSE OF MR. GEORGE E. McCREA, NEAR OAKLAND, CALIFORNIA.

My whole landscape and architectural story was thus so adjusted that one could stand here, in this Indian's council seat, among primitive, undisturbed surroundings, and look downward over the winding paths to the spot where the Spanish padres had sought to take their message to the aborigines, could see what was left of the era wherein the old Spanish families replaced the Indians in the ownership and occupation of the lands, and could feel the exhilaration and satisfaction of having a modern home that answered in every way to the spirit of this ancient history and to the wonders of the landscape itself.

* * *

Cost and Selling Price of Lumber

Build Now advocates are everywhere emphasizing the fact that there is no prospect of building material becoming any cheaper. In fact, many think that a new price level has been reached and the fact that prices are high is not now so much a matter of concern to most business men as is the stability of prices. Lumbermen everywhere are opposed to cutting wages until food and clothing prices are substantially less than at present, and so the reasoning goes in a circle and leads back to the original premise that lumber prices are not likely to drop for a long time to come. Mills in every section of the country are operating now at a loss or are barely making expenses.

Statistics furnished by Pacific Coast dealers show that for 24 operations in February cutting 64 million feet, the total return from the log, f. o. b. mill. was $21.22, and that the cost of producing this lumber was $25.45. During January 28 operations cost $28.10 with returns of $22.61, making a loss of $5.49.

ENTRANCE, ST. VINCENT'S SCHOOL, VALLEJO
SMITH O'BRIEN, ARCHITECT

ST. VINCENT FERRER PAROCHIAL SCHOOL, VALLEJO
Smith O'Brien, Architect

Some Recent Work of Smith O'Brien, Architect

THE following photographs show a few of the recent buildings designed by Smith O'Brien, architect of San Francisco. They represent a variety of subjects as well as styles in architecture and there runs through all of them a satisfying feeling of good design and careful construction.

The domestic work illustrated is particularly interesting, notably the Palo Alto residence, the Blackwood residence, and the hall of the Keyes home; the success achieved connotes the fact that the designs were carefully studied and the buildings well built.

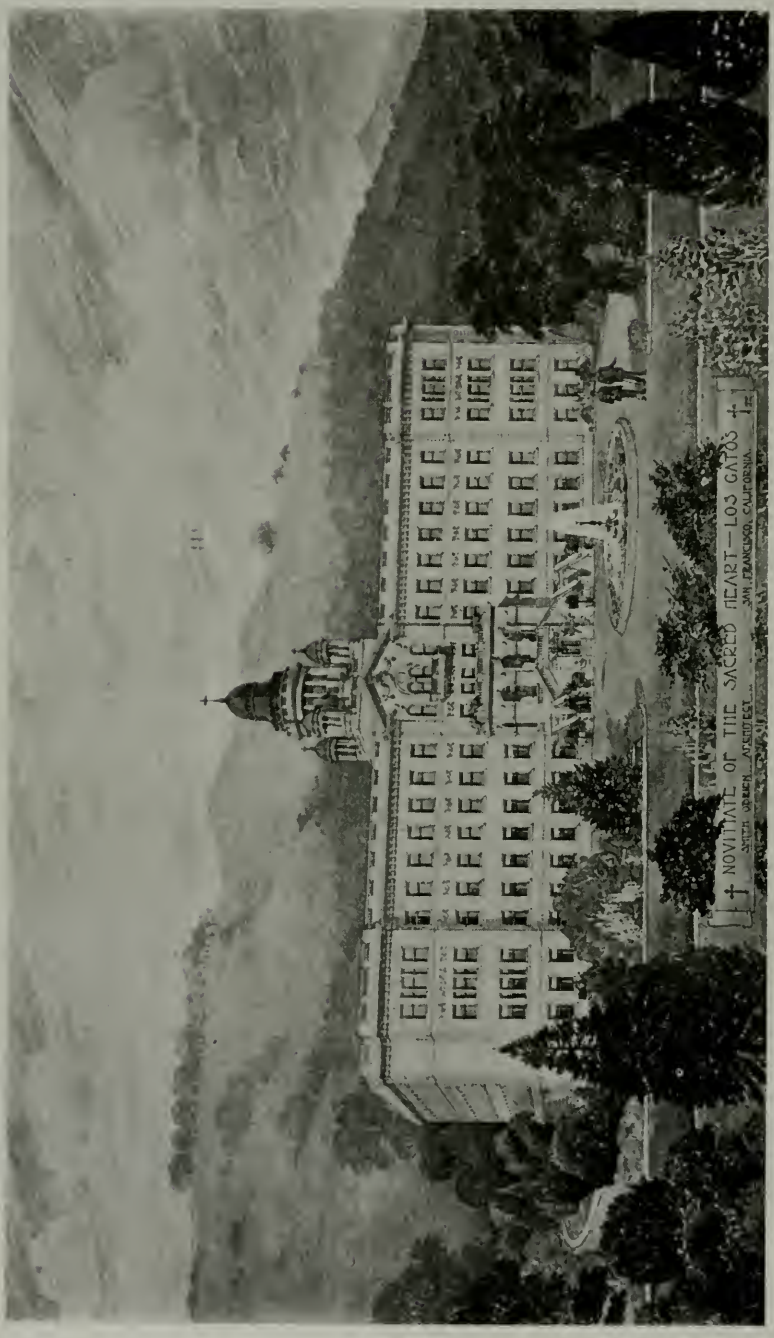
The monumental Novitiate or training school at Los Gatos is admirably handled and will form, when the remaining units are completed, a notable group, situated, as it is, on a magnificent site overlooking the town.

The design for St. Edward's church possesses many qualities of interest in the Gothic style. The interior is handled in a direct and careful manner and should prove one of the best church interiors in San Francisco.

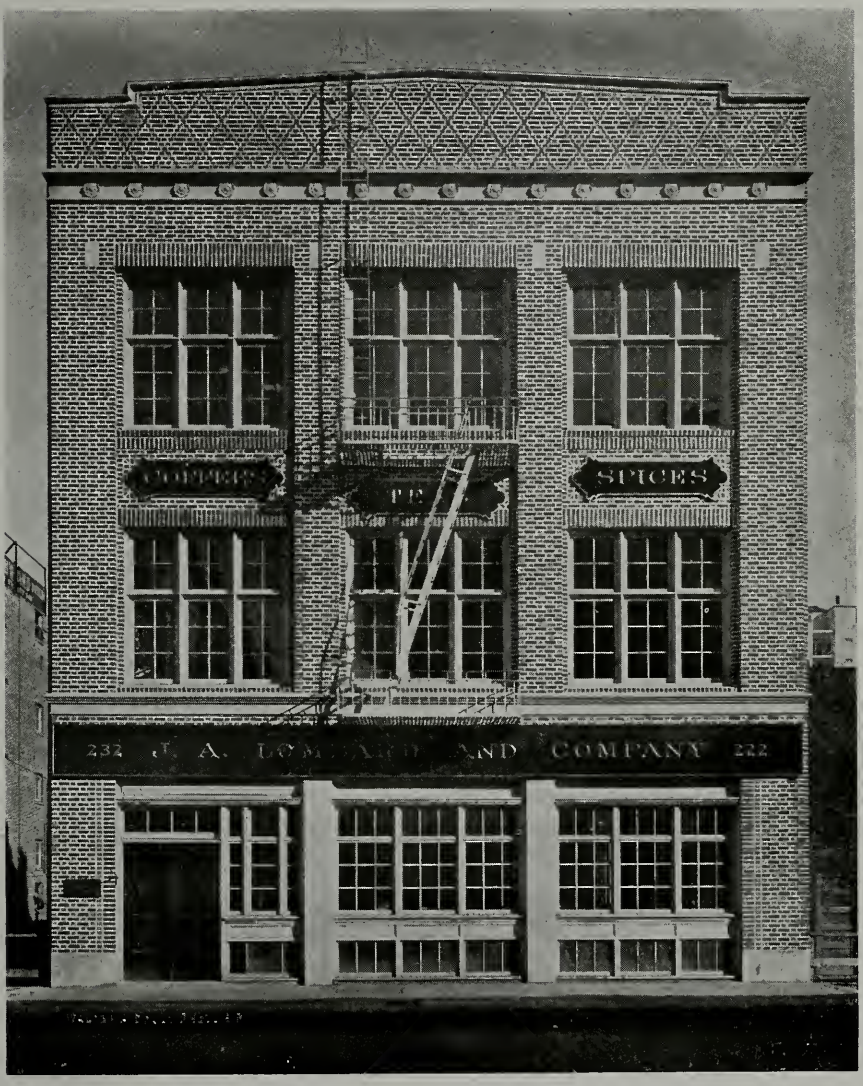
St. Vincent's school in Vallejo represents a step forward in school architecture. For choice of style, directness and simplicity in handling it would be difficult to improve upon. The entrance is noteworthy as a good example of the style employed.

ST. EDWARD'S CHURCH AND RECTORY
SMITH O'BRIEN, ARCHITECT

INTERIOR, ST. EDWARD'S CHURCH, SAN FRANCISCO
SMITH O'BRIEN, ARCHITECT



NOVITIATE OF THE SACRED HEART
SMITH O'BRIEN, ARCHITECT



BUILDING FOR MR. J. HENRY MEYER, SAN FRANCISCO
Smith O'Brien, Architect

The commercial building on Front street, San Francisco, shows what can be done with simple materials intelligently handled.

Mention should be made of the charming little Celtic cross, a splendid piece of artisanship—a single piece of granite seven feet high. The design is adapted from the famous Cross of St. Martin, Iona, Scotland. The cross shows how dignified and pleasing a small cemetery memorial may be made.

RESIDENCE AT PALO ALTO, CALIFORNIA
SMITH O'BRIEN, ARCHITECT

LIVING ROOM, RESIDENCE AT PALO ALTO
Smith O'Brien, Architect

HALL, RESIDENCE OF MR. ALEX. D. KEYES
Smith O'Brien, Architect

RESIDENCE OF MR. ALEXANDER D. KEYES, SAN FRANCISCO
SMITH O'BRIEN, ARCHITECT

DINING ROOM, RESIDENCE OF MR. ALEX. D. KEYES
Smith O'Brien, Architect

LIVING ROOM, RESIDENCE OF MR. ALEX. D. KEYES
Smith O'Brien, Architect

RESIDENCE OF MR. HARRY T. BLACKWOOD, SAN FRANCISCO
SMITH O'BRIEN, ARCHITECT

The Post-War Committee on Architectural Practice

ONE of the interesting subjects discussed at the fifty-second annual convention of the American Institute of Architects at Nashville, Tennessee, April 30 to May 2, was the report of the Post-War Committee on Architectural Practice. The discussion was conducted under the following headings:

Extension of the Architect's Service.
The Architect as a Citizen.
The Status of the Architect.
Responsibility of the Architect.
Percentage Remuneration.
Supervision of Construction.
The Need of a More Comprehensive Service.
Organized Industry.

The Post-War Committee has issued a statement which is being given the widest possible publicity, being mailed to 10,000 or more architects throughout the country, regardless of their institute affiliations. The statement is a plea for co-operation and is the first step in an effort to work together on common ground for common good. Extracts from the report follow:

The Architect's Relations to Those With Whom He Would Co-operate

The Need for a More Comprehensive Service: The modern tendency of business, accentuated by the experience of the war, is to deal with larger organizations with one responsible head rather than with the several contributing factors that go to make up an organization to produce a material result. It is said that the architect has done nothing to meet this demand, but that engineers and contracting organizations have, to an extent, done so.

The war has brought the whole world face to face with a situation which demands that production be increased and that resources and facilities be developed to an extent far exceeding the pre-war volume. The architect appears to have done little to co-ordinate his work with the movement for efficiency in production. The experience of the Construction Division, the Emergency Fleet Housing Division, and the Housing Corporation have demonstrated the great advantage of intimate organized co-operation of all the factors in building production in meeting the exigencies of a war emergency. Such co-operations would appear to be no less desirable in peace times.

Should there not be a closer co-operation between engineers, architects, and construction men? Should not all these qualities be integrated within the architect's organization? Should not all be present at each stage of the procedure? Does this point toward larger organizations in which men of varying qualifications co-operate figuratively as equals rather than the present plan whereby one man—the architect—employs others to work under his direction? Does it not suggest the organization of the architect's own office on lines which would insure the interest of every assistant as a creator rather than as a wage-earner?

The Contractor's Function: Great changes have taken place, in recent years, in the status of the contractor in relation to building enterprises. In important work the contractor now, generally, sells his services on a professional basis. His remuneration is understood to be for the use of his organization and its knowledge of the building business. In such cases this changes the relation of the architect to the whole building procedure.

Many contractors have been quick to realize changed conditions and the apparent desire of modern business to deal with one organization equipped to handle all phases of a building problem. There are, to be sure, some so-called "general contractors" who do nothing but trade on a name, have no technical knowledge of building, and live on the skill and credit of their sub-contractors. But there are also general contractors and construction companies composed of able men, which employ able designers and do all work from the making of drawings and specifications to the financing, building and furnishing of the structure. As against such a system, the average architectural organization dwindles in impressiveness. The services of an architect, where a really competent contractor is selected on the basis of "confidence," is not required in the same degree as in the older method, to watch the performance of the contractor or to safeguard the expenditures of the owner. Nor is he so frequently called upon to adjudicate disputes that may arise between the owner and the contractor over interpretations of the contract obligations. On the other hand, where the old form of lump sum contract is carried out

with incompetent so-called general contractors who sub-let everything and know nothing of building, the work and responsibility of the architect is greatly increased. On the whole contractors are more and more unwilling to guarantee costs as the complexities and uncertainties of building increase and there appears to be a shifting relationship in the professional responsibilities of architect and builder.

In view of these tendencies shall we not have to revise the established relations of architect and contractor? Do these not also suggest a vital reason for establishing a closer co-operation and understanding between architects, consulting specialists, and contractors, and indicate a community of interest that has hitherto been unapparent? Must not the architect encourage and utilize every valuable outside aid to efficiency and yet clarify his own function as an element in building production? Can the man who creates the design also be the director or manager of the whole procedure of building or shall he be primarily the designer? Should not the architect by his experience and training be the best fitted to co-ordinate all branches of the work and successfully administer the enterprise? If not, does it not suggest a serious defect in his training? Would not the contractors welcome such administration if applied in a business-like way by the logical interpreter of the design? Have not building and architecture (which once were the same art) drifted too far apart?

Organized Industry: The architect is said to have ignored or neglected his relationship to one great element of the building world: organized and unorganized labor. He is said to consider that skilled and unskilled labor is troublesome, unreliable and uninterested in good workmanship, in the advance of the art of building and in efficiency.

Has the architect done anything to find out if there is another side to the question? Is the architect convinced that the average builder is so wise a guide to labor that no better condition of employment could be devised? Should not the architect as representative of the owner (the public) be a party to the agreements made between employers and employees in the building trades? Would not a more intelligent study of trades relations avoid many of the disputes between workmen and employers? Could he not co-operate in their relationship so as to place it on a higher plane, make it more human and tend toward better craftsmanship?

Is not the environment of the worker in his shop and in his home largely responsible for the attitude of the worker toward his work and the factor which decides whether or not his happiness and contentment comes from the pursuit of his chosen vocation? If so, is not that environment a challenge to the architectural profession in each community?

If workers generally have become wage-earners rather than creators, is this not a condition tremendously important to the future of architecture and does not the challenge for its correction lie at our door?

Standardization of Building Products: Although efforts have been made in the past toward standardization of building materials of minor importance, it is said that the high cost of building is due in a measure to the great variety and detail of materials demanded by architects' plans and specifications. There are said to be many parts of a building which are now made to special details or which vary in the details as produced by the manufacturer, the standardization of which would simplify and cheapen the process of building, but would in no way affect its appearance.

Is this not a field for co-operation between "material men" and architects that offers a wide field of usefulness? Should not an effort be made to perpetuate and expand the effort made in this direction by the War Industries Board because of the war-time necessity? What are the items that can profitably be attacked and how?

The Relation of the Architect to His Fellow Architects and the Men Preparing for the Practice of the Profession

Architectural Societies: Only a small percentage of the practicing architects of the country are members of any professional organization. There must be a reason for this aside from the proverbial indifference of the human species to matters not patently connected with getting along in the world. Our professional organizations have been accused of devoting too much time to discussions on the art of architecture. They are said to have occupied their energies in the past in prescribing the exact terms upon which an architect may seek or accept employment and have not taken into account sufficiently the kind and quality of service the public demands and is willing to pay for, or the terms upon which the public is willing to engage such service under the ever-changing economic conditions that govern all business operations.

Without expressing any opinion as to the justice of these accusations, can we not consider anew what kinds of organizations are needed in order that through association and conference between architects the practice of architecture may be

advanced and the extent and value of the service it may render to society thus be increased? Is the cost of membership in existing societies prohibitive? Do existing organizations have the influence on public questions which they should be able to exert by reason of their competence? Are they too much occupied with subjects pertaining to their own households? Do we need regional organizations of architects distinct from or as an adjunct to a national organization? Shall we have organization for so-called business and technical purposes only, with no attempt to enforce an ethical code? It has been said that we should have an organization of architects for the sole purpose of bettering the financial standing of the architect. Is there really any such demand?

Competitions: It has been said that a profession whose members are willing to compete with each other for employment can never occupy as authoritative or distinguished a position as one whose counsel is directly sought from its members according to their known qualifications.

It has been charged that the architectural profession is suffering the consequences of having officially countenanced competition as a means of selection,—that competition involves economic waste and is fundamentally unsound,—that the comparison of drawings produced without the benefit of personal consultation or cooperation with the interests that are to use the building when built tends to confirm the belief that architects are primarily picture-makers and that the owner's interests do not demand contract with the architect.

On the other hand, it is claimed by friends of competition that an architect comes out of a competition a better architect than when he entered it, (whether he be winner or loser),—that where the recommendations of the American Institute of Architects are observed the limits of cost are fixed by limits of content, the competence of competitors established by examination of previous performance and judgment by a technical jury guaranteed; a competition becomes a post-graduate thesis of great value to the profession and no greater economic waste than any other form of education.

As part of this question, the methods by which architects are employed need study. There seem to be three ways by which they may solicit a commission: By the competition, as above described; by the social method of utilizing friends and acquaintances; and by the direct business method of soliciting employment, by making sketches gratis, none of which methods are countenanced by good business procedure. The schedule of professional charges has been supposed to be mandatory, or has been used by some architects to indicate a compulsory fee to which they are bound, thus setting up an anomalous condition whereby the public is led to believe that all architects possess equal ability because they are entitled to equal payment.

The younger men have said that only through competitions can they hope to get a chance at important work. Even if this is true, is it a desirable way? Does it lead to progress? Could not a better way be found to achieve this and the purposes generally subserved by competitions? Are not the results of competitions (because of unfulfilled promises) one of the most prolific sources of disappointment and discord between architect and client?

Education: Our architectural schools, in emphasizing with more or less success the important features of design, science, and culture, are said to have neglected to train the students in practical business methods or practical building knowledge, with the result that a large proportion of graduate architects are utterly unprepared to render skilled service. Architecture to them appears to be mainly a matter of designing monumental public buildings. Thus it would seem to be true that many young men gain their actual experience at the expense of their first clients. There is a large question as to whether the practical application of scholastic training can be taught in schools or whether it must be gained through some system of apprenticeship or responsible association with more experienced architects.

What can be done to make our schools more responsive to the practical needs of the world in which we live? Have not architectural schools been woefully at fault in neglecting to instruct their students in their obligations as citizens qualified to render a great and needed service in every community? What can we do to bring this viewpoint to the fore and yet not neglect the training in that art which is the spiritual element of building? What kind of a plan can be devised which will give the inexperienced architect a chance after suitable training to start for himself, yet give him wise guidance?

There is also a great problem before us in the frequently discussed question of new forms of architectural design appropriate to the new ways of living, the new ways of industrial production, and the new social forces everywhere in evidence. Does not this problem require an entirely new kind of training for the young student and continuous study on the part of the practicing architect to keep in touch with realty?

Management of Big Buildings

By W. J. HOGGSON

WHEN should a building manager take charge of a building? Ordinarily a building manager is employed after the building is erected and ready for occupancy; but in the minds of those who have had the largest experience there is no doubt as to the answer: *before the foundations are laid.* He should begin with the plans, and "grow up" with the building, as it were. In this way he not only becomes familiar with its every advantage, but can bring to the architect and builder a vast fund of information, gained through his practical experience, which is invaluable at that time. Many of the problems which arise in the rental of the finished structure, when there is lack of expert knowledge beforehand, are solved with the building manager's help, before they exist. He is not only aiding in the planning and becoming familiar with the details of the structure, but he is beginning his campaign for securing tenants, so that by the time the building is completed the majority of offices are leased.

The scientific management of buildings is practically a new profession, but one that is growing in favor with those who look upon a building proposition from the standpoint of a sound and safe investment.

The average owner, or the tenant of the building for that matter little realizes what it means to operate a building. Between the thousands of tenants in our large office buildings on the one hand, and the owners on the other, stands the man in charge of the building. It is this determined individual who has been developing himself during the past few years, and who must act as arbitrator or referee between the owner and the tenant, and be able to satisfy both, that has come to be known as the "Building Manager."

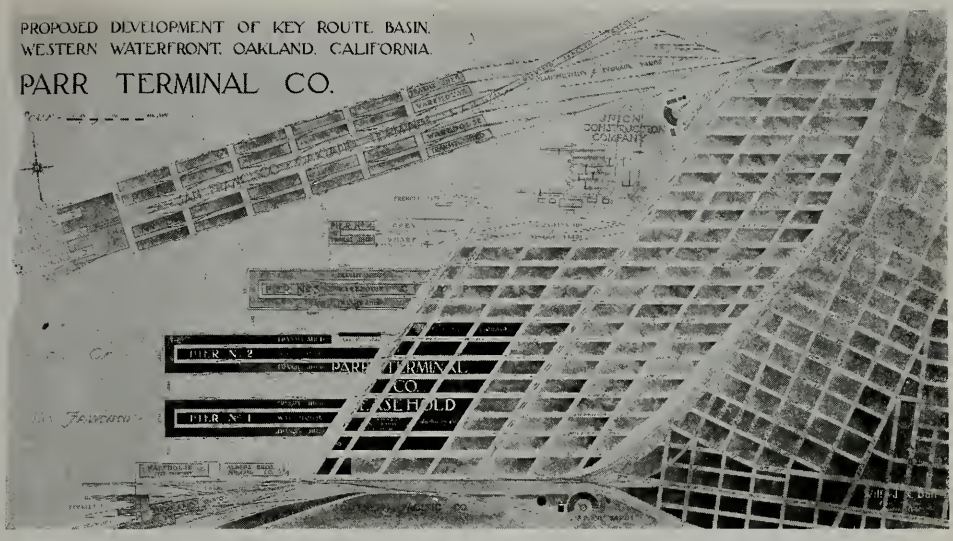
The proper management of business properties involves a great deal more work than merely renting the buildings and collecting the rents. The agent is usually expected to perform many other services for the owner, such as looking after the water rates, tax bills, fire liabilities and plate glass insurance; the hiring of employes, such as elevator men, firemen and engineers. He must also pay their wages regularly. He must get estimates for necessary repairs to the property and keep a close watch on the work while it is in progress. There are also other bills to be attended to, besides all the endless orders that come from the Board of Health, Bureau of Factory Inspection, Bureau of Buildings, and other State and City departments.

The manager of a building is a mayor, police, health and street cleaning commissioner, and department of public works, to a community of several thousand people under a single roof. So vast has this real estate field become that no man can possibly know it all, and the higher the building specialist develops, the greater success will be the building from an investment standpoint.

He must be competent to select the most capable men for the heads of the different departments, men who know their work, when and how it should be done, and will see that it is done when it should be, and as it should be. To do this in such a way as will produce the best results, he must be a good student of human nature. He must be sure that every employe carries out the spirit of the management.

It is not necessary for the building manager to be a plumber, but he should know where the different values are located, and what they are for, so that if it became necessary for him to shut the water or steam off from any part of the building he could do so without calling the engineer.

He should be enough of an electrician to know where the different switches are located, what machines they control, and should be able to throw them off



BLOCK PLAN OF PROPOSED DEVELOPMENT, KEY ROUTE BASIN
Wilfred N. Ball, Chief Engineer

Proposed Parr Terminal will be Largest Port Terminal on the Pacific Coast

By WILFRED N. BALL, Chief Engineer

THE Parr terminal is located on the east shore of San Francisco bay, immediately alongside of the harbor terminal of the Southern Pacific Railroad with its car-storage yards and main line connections overland, and its interchange track connections with the Western Pacific Railroad, the Atchison, Topeka & Santa Fe Railroad, and the Oakland, Antioch & Eastern Railroad.

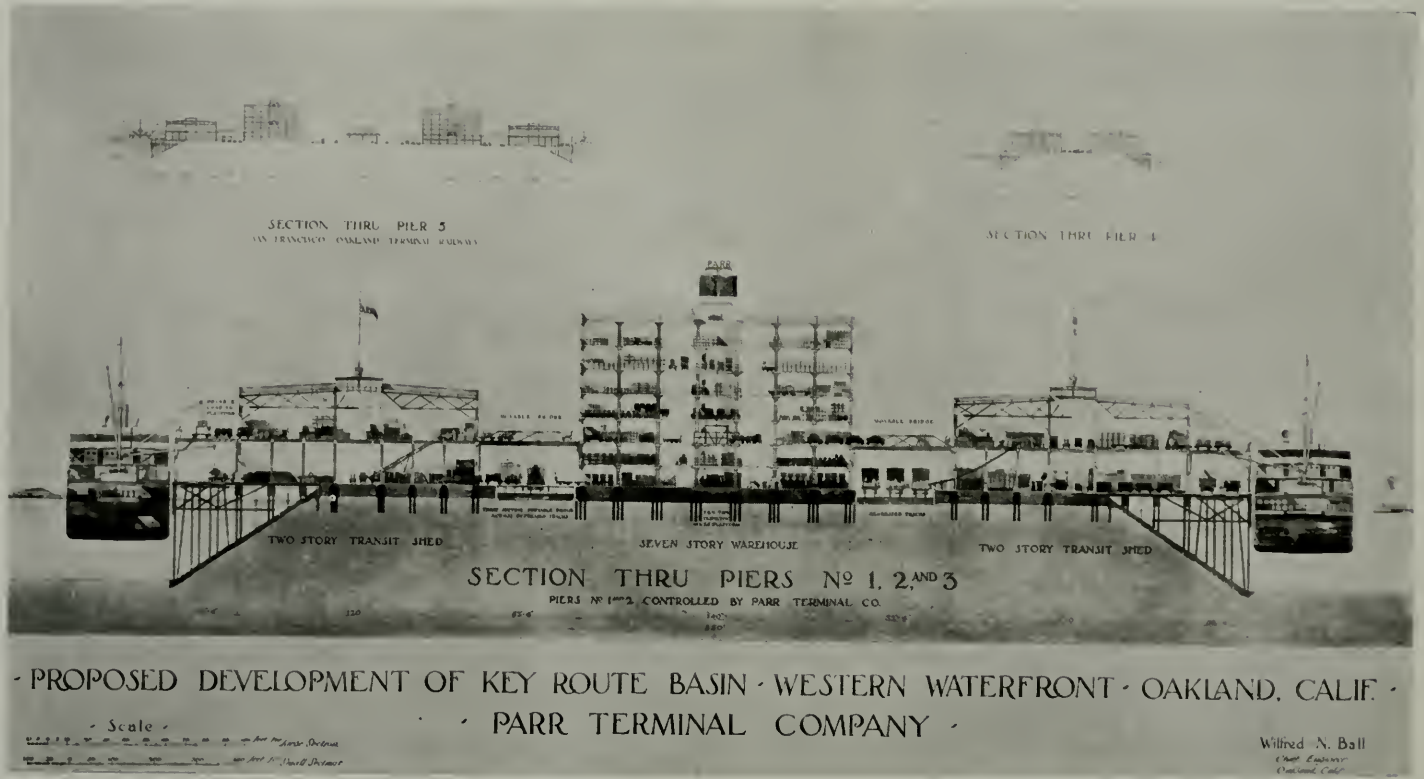
The site is a portion of that part of the western waterfront of the city of Oakland known as the Key Route basin, situated between the Oakland pier of the Southern Pacific Railroad and the pier of the San Francisco-Oakland Terminal Railways (Key Route System).

Here an area extending 2008 feet along the waterfront and 1668 feet back of the United States bulkhead line was taken over by the Parr Terminal Company under a long term lease from the city of Oakland on June 15, 1918.

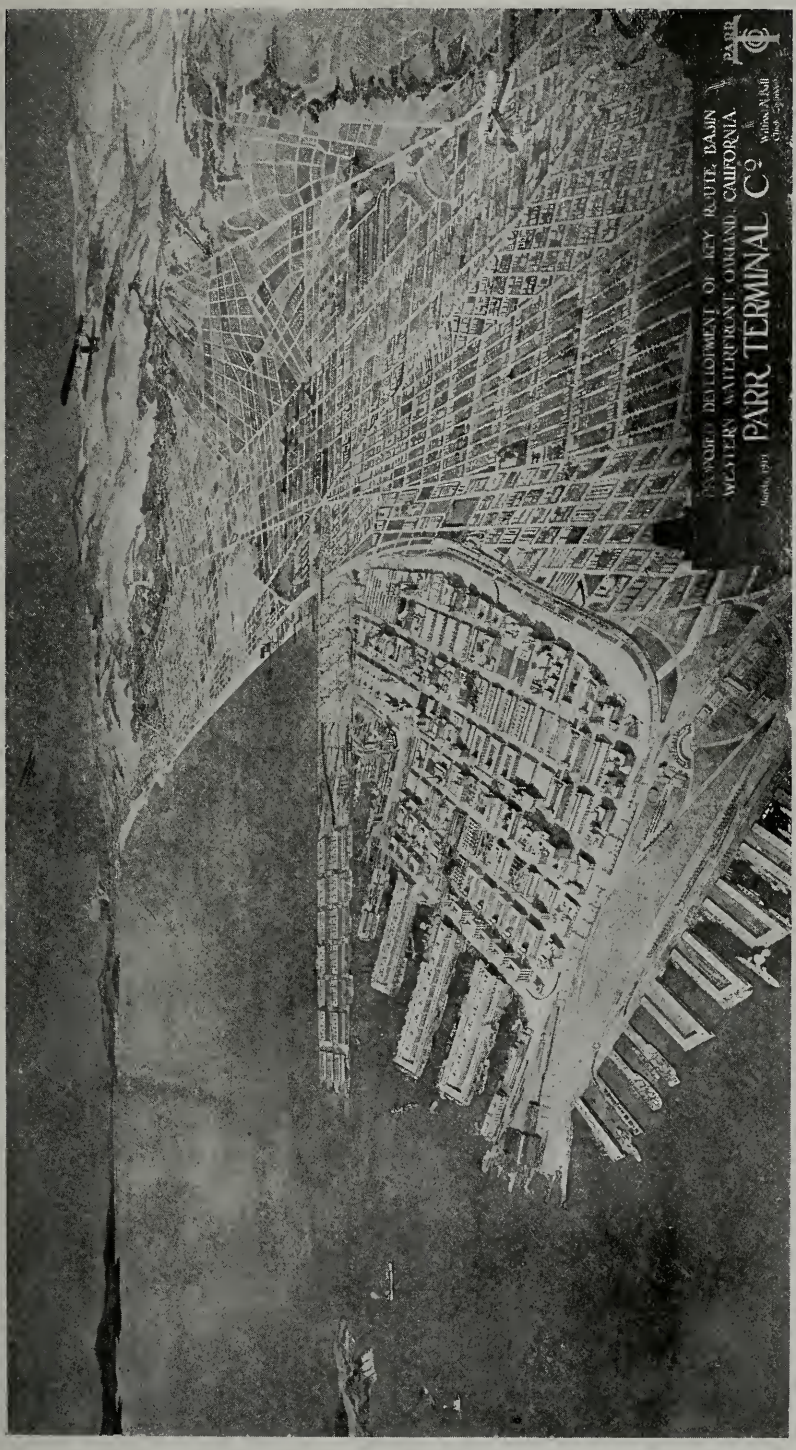
The engineering department of the Parr Terminal Company has laid out a comprehensive scheme of development for the Key Route Basin with the thought in mind that the 65 acres which the Parr Terminal Company controls will be developed as a unit of this rather ambitious scheme for the development of the whole basin.

The Key Route Basin project consists essentially of four large piers abutting city frontage and a suggested plan of development for the Key Route pier, which is held by the San Francisco-Oakland Terminal Railways under a 50-year franchise, all of which is approached by railroad tracks and paved streets, and backed up by ample warehouse and industrial sites.

An embarcadero 200 feet wide extends across the frontage from Seventh street at Albers Brothers Milling Company's plant on the south, to the Union Construction Company's plant on the north, and the necessary east and west streets are laid out to give the most efficient size and shape for warehouse and industrial sites and the best layout for spur tracks.


SECTION THRU PIER 5
SECTION THRU PIER 4
TWO STORY TRANSIT SHED
SEVEN STORY WAREHOUSE
TWO STORY TRANSIT SHED
SECTION THRU PIERS Nº 1, 2, AND 3
PIERS Nº 1 AND 2 CONTROLLED BY PARR TERMINAL CO.
PROPOSED DEVELOPMENT OF KEY ROUTE BASIN · WESTERN WATERFRONT · OAKLAND, CALIF.
PARR TERMINAL COMPANY
Scale
Wilfred N. Ball

SECTION THROUGH PIERS, PROPOSED DEVELOPMENT OF KEY ROUTE BASIN, PARR TERMINAL COMPANY
WILFRED N. BALL, CHIEF ENGINEER



AEROPLANE VIEW, PROPOSED DEVELOPMENT OF KEY ROUTE BASIN, PARR TERMINAL, CO. WILFRED N. BALL, CHIEF ENGINEER

Tracks paralleling the south, east and north sides of the Union Construction Company provide ample storage and classification space which will be directly connected through a Belt Line road, to three trans-continental railroads and to all piers and industrial sites.

The Parr Terminal Company's property, as shown on the aeroplane view, consists of 20 blocks immediately north of Albers' mill and the large storage and classification yard and terminal of the Southern Pacific Railroad.

The scheme of development calls for four tracks on the embarcadero, connected with the Southern Pacific on the south and the future tracks on the northern development of the basin. These tracks will be drills for the piers and industrial and warehouse sites.

It is proposed to build a battery of five warehouses immediately east of the embarcadero, which will be of Class "B" construction and designed so that they can be readily changed over for use as industrial lofts.

The ten blocks immediately east of these warehouses are set aside for the construction of industrial loft buildings (after the Bush Terminal type) and for subleasing to industries for erection of plants which will be tonnage producers.

The small block abutting the embarcadero just north of the five warehouses is set aside as a site for a combination pumping and heating plant.

The pumping equipment with the proper piping and loading racks with connections to piers will be for Oriental oil handling facilities, and the heating feature is for connection to the proposed industrial lofts.

The two large blocks immediately east of this pumping plant are set aside as sites for vegetable oil storage tanks.

The small block north of the pumping plant and which is the northerly limit of the Parr lease, is to be used as a corporation yard for the Terminal Company.

The two blocks immediately east of this corporation yard are to be used for the storage of Alaskan Anthracite and other coals, and will be provided with the proper handling facilities, which are connected with the second pier with the overhead telpher systems.

The two large piers shown in the aeroplane view just north of Albers, mill are facing the Parr lease and a detailed section of these unusual structures is herewith shown.

Individually, any one of the units which make up the Parr Terminal is a large and important engineering structure worthy of detailed description. Collectively, the whole project is a remarkable example of a modern freight handling port terminal, with a large industrial hinterland, a necessary shipping element hitherto rare in this country and especially on the Pacific Coast.

The attention of this article, therefore, has been mainly directed to the composite design of the terminal rather than those structural details which in so enormous an undertaking would require space far beyond that available here.

Mr. R. S. McElwee of the United States Department of Commerce, author of the text-book, "Ports and Harbor Facilities," etc., a port authority of international reputation, said respecting this plan for the Parr Terminal and the Key Route Basin at Oakland:

"This is an exceptionally complete and modern layout according to our latest experience and thought in port development * * * altogether your plan fulfills all the points of cardinal importance, and such a terminal will be nothing short of epoch-making."

The two great ocean piers are largely modelled upon the exceptionally successful Port Commission Ocean Piers at Seattle (Smith's Cove) which in turn were adapted from designs of piers at Manchester, England, and at the Tilbury Docks, London, with the additional feature of the shipside concrete warehouses.

The Parr Terminal Company and its engineering department owes the suggestion for the design of these piers to Mr. Hamilton Higday, formerly Port Manager of the port of Seattle and now with the Parr Company, and Mr. G. F. Nicholson, Chief Engineer for the port of Seattle.

The Parr Terminal Company is placing and ballasting permanent railway tracks three and one-half miles in length upon the property, largely utilizing 85-pound rail, directly connected with the above-mentioned Southern Pacific freight tracks. This represents an expenditure of nearly $100,000. Extensions to track connections with the Santa Fe, Western Pacific and other lines have been carefully planned to be effectuated as soon as practicable.

The old municipal apron wharf, 1077 feet long, astride a rock riprap, is being extended to 2008 feet in length (or the full frontage of the property), raised four feet to the grade of the adjacent wharf of the Albers Bros. Milling Company, and shipside tracks installed, a $125,000 contract.

A cargo shed or slip-head house, 120 by 500 feet, estimated cost $65,000, is to be erected at once upon the new apron wharf. The plans are now in the contractor's hands and bids will be accepted by the company shortly. This shed is to be built primarily to serve the Parr-McCormick fleet and other coastwise vessels and river steamers, as well as provide promptly one entirely suitable berth for trans-Pacific ships.

The northerly portion of the 2008 foot apron wharf will be left uncovered for the reception of timber, structural steel, railway material and other heavy commodities served with traveling cranes on shipping spurs.

The first unit of pier to accommodate overseas cargo, 800 feet long and 180 feet wide, supporting a cargo shed 120 feet in width, planned for two stories, with nearly 200,000 square feet of covered floor space, is expected to be commenced during 1919.

A concrete warehouse, with 97,000 square feet of ground floor space, is now being designed and will be erected on one of the large upland blocks fronting the embarcadero, and under the terms of the lease, construction must start by June of this year and building must be rushed to prompt completion.

The lease requires the installation of a coal terminal for the reception and distribution—both inland and to vessels—of Alaska anthracite coal. The first unit of this plant will be started during 1919.

The early installation of pipe lines, heating plant, electric pumps, steel and concrete tanks, tank car spurs and other oil facilities suitable for Philippine and other vegetable oils is programmed.

The necessary street and sewer work for immediate needs is now being constructed.

The Parr Terminal Company expects to be operating the first unit of their plant (apron wharf, cargo shed, railroad tracks and roadways) by July 15th of this year.

* * *

Interned American Engineers in France

It appears that many American engineers are being detained in France. One engineering society has passed resolutions urging the speedy return of all highway engineers. The Engineering Council and the American Association of Engineers should send representatives to Washington, D. C., to convince government officials that American highway engineers should not be detained longer in France. They are needed at home.

Home Furnishings Production—A Part of America's Reconstruction Job

By RICHARD F. BACH

THE words industrial art imply the relation of art to industrial or mechanical production, which in daily parlance signifies the relation of appealing form and color to utility. They mean that usefulness, while remaining an essential objective, is shorn of its ability to contribute to cultural progress if it is not made sufficiently attractive to contribute pleasure to human environment. This relation between industry and art is embraced in the word design, a type of thinking that Americans have been too ready to let others do for them these many years.

While counting upon mass production as a quick road to large figures on our national ledger, we have not been far sighted enough to discover that mass alone becomes an obstacle in all articles which constitute our domestic surroundings, if a constant and consistently growing appeal does not form a part of its reason for being. The exact value to be placed upon the material and the design we have for many decades gauged incorrectly. The gloss of surface carving will not pass for design. The gimcrack assortment of motives which is the merest filmy cloak for the structural conception identical in all styles unless related to every guiding line in the piece; the gathering of suggestion repeatedly from books—and usually from poor books or designs themselves copied from others of their own ilk without recourse to originals—brings about a stalemate in design. Execution improves, design lags.

Execution, methods of manufacture, cannot supplant design; they can only facilitate design. Without design they serve requirements of utility only and might as well be diverted to merely mechanical objectives in which appeal to the mind through the eye or sense of touch is the least consideration. Objects of industrial art without an adequate inspiration in design serve their function as well as a piano played when out of tune.

American business men are known to be shrewd, yet their shrewdness is too momentary in its application. In the great field of the industrial arts commanding an outlay of $500,000,000 each year these very business men have not taken thought for the future. They wail for the designers that Europe has recalled, they lament the fate of American furniture, and turn around to make just what they have made before with a minimum improvement on the plea that design is too expensive, whereas correct reasoning would show that good design is an investment costing less than any other single factor in industrial arts production when considered in terms of ultimate cash returns.

There is but one help for manufacturers in the industrial arts field—only one: education. They must educate designers, they must establish schools for training designers, they must realize that design is a cash asset, an all-for-business investment in every piece they turn out, in every yard of goods they print or weave. They must appreciate that design does not mean "fancy" pieces or over-elaboration. In short, they must come to the conviction that design means quality and that only good design commands a good price. Birch is not mahogany, garish convolutions are not ornament. Refinement is the index of taste and taste is the keynote of American industrial advance. Education points out the difference between the artistic progress of France and the industrial art stalemate of America.

In many branches of life men have seen the salvation of their business enterprises in the training of those to whom they pay salaries. In the industrial arts field the voice of not one manufacturer has been heard in favor of schools

to teach designers. Rather a million dollars for mass output to achieve large selling figures now than five thousand dollars toward a school whose human product will make the one million into ten within a few years. Rather hundreds of thousands of inferior designs to serve as drugs for American taste than a few hundreds of high quality designs that will gain for us the international respect without which our product will command no price abroad. Rather self-seeking individual factory output than unified patriotic endeavor for the good of America.

Schools we must have—in every branch of industrial art production we must have school training as a feeder for the factory of the future. Designers will surely always come up from the ranks, but if there are potential designers in the ranks of factory hands, they deserve the chance to make the journey toward a designer's salary by the line of least resistance.

The school is a part of the factory, and the fact that it is not under the same roof with the machinery of production does not alter this truth. To hesitate to train designers to turn out the best for the American market is to waste material, to waste effort, to waste money, to waste the precious time which we have lost in depending upon Europe so long.

To the manufacturer we say: The schools you help to found now will not thank you for your patronage, for you will be doing yourself a favor in contributing to their support. In founding schools you are simply putting money in bank. They will return many times your cash investment. They will bring you designers capable of raising American standards to an eminent position among nations. Is it worth while to help yourself? Is it worth while to help your field of production? Is it worth while to help America?

By all means let education do the job—let "schools, schools, always schools" be your slogan, and let us have these schools now. Every day lost is a handicap. If you have faith in the future of American industrial art, build for the future. Do it now.

And while the schools are being put under way, the educational values of museums must not be ignored. Practically all of our museums maintaining collections in any of the industrial arts fields have made many efforts to reach designers, to appeal to manufacturers, to establish the business value of design. To develop design without the use of museums is to study chemistry without the laboratory.

Thus the Metropolitan Museum of Art in New York City is a large central laboratory for the designers and manufacturers of the Metropolitan district. In fact, its lines of effort reach to remote corners of the country. It maintains lending collections of many kinds—photographs, lantern slides, maps, charts, actual samples of textiles and laces, casts, and even post cards. It distributes annually many thousands of photographs which are used directly for working up designs in the designing rooms of the industrial arts producing plants, the cost of such photographs being so nominal a consideration that that department of the Museum is constantly overworked. In the Museum building it maintains enormous collections of direct value to men in the practical fields, a convenient textile study room, ten thousand samples of textile art of all times, many costumes—this much in the textile field alone. The entire collection of industrial arts objects embraced under the general title of decorative arts numbers fifty thousand.

There is maintained a service involving the entire time of three Museum instructors engaged in bringing home to visitors of all kinds and classes the value of individual pieces or of entire collections.

OIL PAINTING BY RUTH LLOA SCHMIDT, SHOWING CORNER OF STEEL FRAME OF EXCHANGE BUILDING FROM WINDOW AT 333 PINE STREET, SAN FRANCISCO

Living Architecture*

A WEAKNESS of present-day architecture is in its not having sufficient grasp of modern scientific construction. The failure of English engineering is that it is usually mean and brutal, like Charing Cross bridge, or, ashamed of itself, it seeks for disguises like those of the intolerable Tower bridge. Judging by its works rather than its claims to "science," our engineering seems often both ignorant and impotent.

The ideal for masonry has been definition and delicacy, sharply cut angles, moulding, carving. The ideal for concrete construction is much the reverse: it is that of continuous aggregation into a homogeneous, chambered mass; the structure is "cast"; simple forms and rounded edges are required. Its special disadvantage is in being liable to cracking, and the least cracking in such structures seems to destroy the possibility of our having any pleasure in them. A building of such a fabric should be as continuous and sound as a china vase. It is necessary first of all to improve the material so that it won't crack. Our continued use of materials like mosaic and cement floors in such a way that rivers or cracks wander over them after a few years is somewhat astonishing.

Once having mastered the material and having produced a fairly even surface, we have to bring out what it can best do on its own merits, and put away any attempt at imitating forms developed in stone and brick building. Curved lines in plan and slanting and curved surfaces would seem to be specially appropriate to this mud-like material which must be modeled, as it were, into form. Inferior angles of Roman rooms were usually rounded. Corners might be rounded both within and outside; cornices, if any, might be simple coves or rounds. The surface could be finished with white and color washes, plastering, painting, rough-cast, sgraffito, marble-veneer, mosaic, glazed tiling and glazed terra cotta applied in panels and medallions. The aim should be to develop structures in which the walls and roofs are all of a piece; and there is surely something exciting in such a mode of building. The general design must in every case be arrived at as the best constructive solution of the given problem, but it must be a fine and civilized solution, not a raw and haphazard one like so many of our engineering works. Exquisite common sense is wanted. The aim should be for masterly construction appropriately or even delightfully finished. Beauty in structures is not a question of mere shapes, but it is the evidence of mind acting on materials.

If we could have a fine market or railway shed (or even a cathedral) schemed like some of the wonderful war sheds drawn by Mr. Muirhead Bone, well built of its kind, flooded with light, carefully finished, brilliantly whitewashed like a lighthouse, and decorated with fine paintings, we might "catch our breath" once more at the sudden sight of a piece of living architecture.

One of the buildings which has most interested me recently is the newest museum building at South Kensington, temporarily completed with the "style" left out. Many of the temporary war buildings are also direct and structurally interesting. Although such buildings are frequently only skeletons, they demonstrate that a piece of architecture may be got to stand up without shamming dead.

Let us consider the "carcass" of an important public structure. A rim or lining of marble might be put around the doorway, and over it could be some fine heraldry carved, gilt, and colored from the design of one of our heraldic experts; not the fat, tame stuff we are accustomed to, but keen and vigorous. This would probably be enough, we don't want our buildings worried all over, we want richness and color and food for thought, but we also need bareness

* From an article by Professor Lethaby in the British Builder.

and relief and peace. Or a set of fine sculptured panels, about something, might be set low down where they could really be seen and loved—really loved —not tolerated or hated. Or an inscription really saying something in clear, strong lettering might be cut in in a band high up, or in a large panel, or, again, this might be in mosaic of gold letters on blue, or black letters on gold—not timid and frightened and non-committal, but an inscription to lift up our hearts. Or between the windows might be a set of really handsome medallions in glazed earthenware, either in relief or only painted devices, or portraits, but again, with some meaning and intention—surely we are rich enough to have meanings and intentions.

* * *

How Architects May Secure More Extended Recognition

ENGINEERS, by their energy and success in gaining the public ear, are fast driving the modest, timid architects out of business, stated Mr. George Hancock in his presidential address before the North Dakota Architects' Association. To offset this tendency, he continued, we notice that many architects, in order to keep up with the procession, have added the title of engineer to that of architect for the purpose of impressing the public with their superior qualifications over and above that of the properly trained architects who make no claim to other professions. Architecture and engineering are two separate and distinct professions, and it is given to but few men to master the intricate details of both, so that in most cases the assumption of the dual title is used for the sole purpose of gaining advantage over those who do not have the temerity to adopt such with little or no preparation.

The Massachusetts Institute of Technology makes the distinction between architecture and engineering and has separate courses for the training of students in each, as either is all that the average intellect can properly master with credit to himself. So that the mere adoption of a title without the necessary training to properly sustain it should at least be discouraged by all self-respecting architects.

Some professions, such as the law, are held in less esteem than that of architecture, and if we would increase respect for our profession we must command it through our work and that will bring us the public recognition we so urgently need.

It is useless for us to look to the law courts for protection, as the lawyer is the only winner where such efforts are made, but as a reason for hope in the improvement of our chosen calling, we have only to look at the host of poorly paid teachers and clergy to learn that our lot is no harder than theirs, in the matter of lack of appreciation of the service they render to the public. It is well to think of others when disposed to complain of our lot.

If we could succeed better than they we must do better and nobler work, with our minds set more on achievement than on temporary financial success. It is futile to complain that this is a commercial age, with but little public appreciation of art; such whining does no good and only indicates weakness. There is just as much artistic taste and feeling in the world today as in the days of Titian and Michael Angelo, and it is for us to satisfy this artistic taste and feeling if we would succeed in gaining for our profession the respect and recognition to which we believe the nobility of architecture is entitled.

During the past ten centuries architecture has come through many changes and developments. The eighth and ninth centuries gave us the unique creations of the Saxons; the tenth and eleventh centuries the solid, honest Norman work that has so well stood the test of time, as evidenced at Winchester and Durham.

The twelfth and thirteenth centuries gave us the pure and graceful early French and English Gothic that so clearly expresses the aspirations of the people of those nations in the magnificent creations of Rheims and Amiens, Salisbury and Westminster, the like of which has never been seen before or since that age. The fourteenth and fifteenth centuries gave us the geometrical and perpendicular styles, often referred to as the climax and full development of gothic architecture in Europe.

Such art and architecture as the people of those times produced should serve as a stimulant to greater efforts of the younger architects of our time. They had no examples to guide them and their work was the result of creative and imaginative concentration and skillful independent effort.

Shall we, then, with all these beautiful examples before us and the numerous examples of the Renaissance of the sixteenth century, and the more recent productions of Jones and Wren and the revival of the Romanesque by Richardson and Hunt in this country, fail for the lack of making an effort to merit the recognition we so earnestly crave? No, we must attempt much even if we accomplish little, but as effort is the parent of results, we can expect no recognition by the public unless we command its attention.

By education and experience the architect of today should be better qualified to handle successfully building operations of all kinds than men not having such qualifications, but the public cannot appreciate this for the reason that the architects have not done their part in the instruction of the public to the point of appreciation of their service to their clients and to the public in general.

So far, along this line, our efforts have been limited to talking to ourselves through the medium of professional and trade journals, that seldom or never reach the eye of the general public, or prospective client.

Undue modesty on the part of the trained architect is doubtless the cause of this shyness and should be overcome by a much-needed change in the method of bringing the client and architect together, on a better and fuller understanding of their relationship to each other, and to protect the public from the trickery of the faker and charlatan who is ever ready to pluck the fruits of honest effort along all professional lines. The men who have fitted themselves by great expenditure of money and time to serve the public in an honest and skillful manner must have some protection as against quacks who have no training in architecture and who do their work by proxy and only see the commission or money side of the profession.

The licensing of all architects is a reasonable solution of the problem.—Engineering and Contracting.

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Draftsmen are Scarce

San Francisco and bay city architects report a scarcity of good draftsmen. Many of the large offices are in need of men, yet it seems almost impossible to obtain them. Higher wages than ever before are being paid. Mr. C. W. Dickey, Oakland architect, will return to Honolulu June 10, where he has more than $500,000 worth of new work and he is in search of two or three competent draftsmen to accompany him.

Thousands of Homes Needed in Mexico

By LAZARO BASCH*

DURING the last six years of internal strife in Mexico, which ended in the triumph of the Constitutionalists, a great change took place amongst the rural population. Numbers of hacendados (land owners) and middle-class people in general, tiring of the simple life of the mountains and attracted by the gayety of the capital and the opportunities it offered them, flocked to Mexico City.

There they stayed in hotels or with friends for a time, the gay social life of "la ciudad de los palacios" luring them to remain,—especially in the case of "la donna movile," with the result that soon every available house in the beautiful city was occupied.

A great number of those who came before the monetary system changed to a gold and silver basis, over two years ago, imitating the "bas bleu" (Blue stocking) of the French peasants, concealed their gold coins in old tin cans and boxes, under mantelpieces, etc. These naturally, because they possessed gold, were preferred tenants to those landlords who were accustomed to receive their rents in the more or less fluctuating currency of the realm, at that time. The inevitable consequences were that thousands of Mexicans found themselves dispossessed, without homes and nowhere to go. There were no more houses and the landlords favored the immigrant population who paid in trusty gold.

The situation was and is lamentable, not even taking into account the millions who will surely flock into that wonderful land of limitless resources, once the borders are opened.

It is no exaggeration to say that should a building enterprise, either alone or co-operating with other interests, go to Mexico and put up 5,000 portable houses on the bungalow style, of two, three or four rooms, the houses would not only sell at a good profit to their owners, but would be the means of establishing a permanent business in that line. Moreover, to complete and furnish these houses, there are needed iron, steel, nails, hardware and implements of every nature and description.

Two essential elements in effecting the construction of these houses are: (1) raw materials; (2) labor. Regarding the former, there is an abundance of wood of any nature required, but the iron needed for the framework, the steel fittings, nails, etc., would have to be sent in from the United States; of the latter essential there is an adequate supply. Furthermore, a good carpenter in Mexico asks but 4 pesos per day, which would be $2.00 American money, or only a third of the union wage paid carpenters in this country.

The insufficient housing situation applies not only to Mexico City, but to port cities as well, on both coasts. Vera Cruz, for instance, is so overcrowded that when a European steamer has docked, dozens of persons may be found sleeping, stretched out on benches in the plaza, for lack of getting hotel accommodations.

It is the same at Tampico and Manzanillo. At the latter place, on the Pacific side, there is but one hotel, which hardly deserves the name, considering the up-to-date appointments of our modern hotels.

From Quintana Roo (the eastern part of the Yucatan peninsula) two firms have announced their need of proper housing facilities and their ability to pay spot cash for the same.

As the need for proper housing seems most apparent on Mexico's eastern coast, I would advise as follows:

* Commercial agent of the Secretary of Industry, Commerce and Labor, of Mexico, and representing in San Francisco the Mexican Products Exhibition, Thomas Clunie building, 519 California street.

Get together a combination and make 100 sample houses, ranging from the one-room and bath bachelor apartment to the six-room family house. Construct these in different styles, fittings and decorations, with a view toward pleasing all tastes, but make them as modern and hygienic as possible. Each casita (little house) should have a modern lavatory, bath, sink, stationary washtubs and sanitary plumbing system. Furnish them simply, not forgetting the indispensable wood or coal stove. A wall-bed in each house, or bedroom, rather, would not only be a novelty that would make the matter of rent of little consequence, but would be such a space-saver that it would immediately find favor with the Mexican housewife, who could so easily transform her bedroom into a reception parlor by putting the bed out of sight. Equip the houses with sufficient doors and windows and finally paint them attractively.

Rich land owners could be induced to make very satisfactory arrangements for leasing the land required for this little colony. In fact, I know of one business firm of French origin, with extensive holdings in the heart of Vera Cruz, who might be persuaded to lend the land for the experiment, or at any rate would probably take a financial interest in the enterprise, if properly approached on the subject.

Have the houses erected immediately. With an intelligent engineer and a few carpenters who speak Spanish, sufficient labor could easily be secured to complete the houses in a week, assuming, of course, that the parts were well-constructed and plainly marked.

The houses once erected, some clean-shaven, clever real estate orator, who also must speak Spanish, should establish his office in one of the model houses and begin putting up signs on the buildings, "Al Alquilar ó A Vender" (For Rent or for Sale).

Before a week's time I am positive every house would be occupied at an average rent of, say, 30 pesos for one-room apartment, 45 pesos for two rooms, 60 pesos for three rooms, 75 pesos for four rooms, 100 pesos for six rooms. Divide these amounts by two and you have the rents in American money, which in fact favors the United States coin, as there is a premium on Mexican gold.

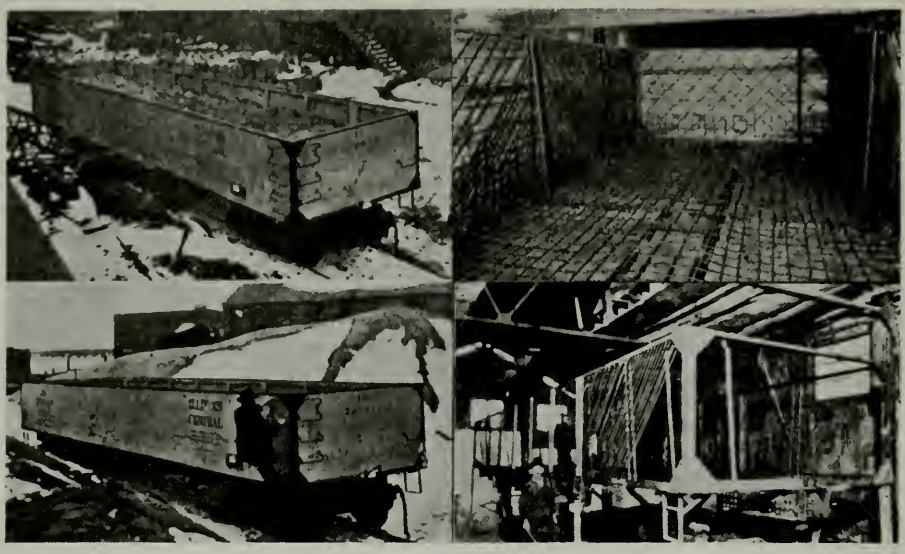
The good news will spread with lightning rapidity all over the country. The Mexican press, which is not in the same category with that of this country, will not infer that you want a free ad, but will gladly do their bit to help the propaganda, realizing that it is filling a long-felt public want.

Soon agents from surrounding towns will flock in by train to see the wonderful village, and as "Seeing is Believing" and "The Proof of the Pudding is in the Eating," before they return to their own cities they will have contracted for thirty to forty of your model houses, before the delivery of which they will draw you a check, or pay gold, to cover.

Meanwhile, before two years have elapsed, the cost of these houses will have been covered in rents alone. Your orders will be so immense that you will feel disposed to donate the original 100 houses to the city for housing its poor.

One party is already trying to promote and interest Mexican capital to erect a thousand such homes in Mexico City, where the need of them is very great. Vera Cruz is but ten hours distant by rail, and travel there is as safe as anywhere in the United States.

Regarding actual conditions in Mexico, except for a few isolated mountainous regions of Chihuahua, where there are occasional uprisings, absolute peace prevails throughout the republic. The Administration is doing all in its power to exterminate these terrorists, and considering the progress it has already made, it will not be long until bandit lawlessness shall have become ancient history.



FIRST GONDOLA CAR OF REINFORCED CONCRETE. PHOTOS ON THE RIGHT SHOW METHOD OF CONSTRUCTION

Reinforced Concrete Freight Cars

NEW uses for concrete come frequently to public notice. One of the latest, and one that promises to be far-reaching, is the concrete freight car. The beginning of practical plans for the manufacture of reinforced concrete freight cars dates from 1909, when a patent for such a car was granted to Mr. Joseph B. Strauss of Chicago.

On account of the war, construction of a trial car was delayed, and it was but recently that the first car, of the gondola type, was completed by the R. F. Conway Co., Chicago, and tested under service conditions. Not only in the material used, but in its design and the details of construction, it represents an interesting departure from usual methods.

The basic feature of the design is a steel skeleton body forming the outer boundary of the car, and mounted upon a steel underframe. The concrete walls and floor are contained within this frame and, together with the frame and floor reinforcement, are connected to, and interlocked with, the underframe. The steel frame forms the finishing and protecting edges, thus entirely shielding the concrete and also serving as a complete system of stress-bearing members.

In the construction of the test car, the "cement gun" was used. The forms were placed on the outside of the car, and the cement was shot against them from within. The outside of the car, that is, the surface against the forms, was given a smooth finish, but the interior was left much as it came from the gun.

The use of the cement gun increased the unit weight of the concrete above that computed. As a result of this and the necessity of using heavier sections than required, the weight of the car when completed exceeded the computed weight by more than 3,600 pounds. This experiment, however, makes it evident that with proper facilities for construction, another car of this size and design can be made to weigh somewhere between 46,000 and 48,000 pounds.

Tests of the completed car, both empty and loaded, demonstrated its practicability for rough service. In the test without load it withstood extremely rough handling in switching, and came through without injury. Subsequently,

the car was loaded with fifty-five tons (10 per cent overload) of sand and turned over to a switching crew for service handling. It withstood this test also without injury.

Other merits are claimed for the concrete car. It will not need painting and will practically eliminate maintenance charges. Its life will be much longer than that of the wooden car. It will have the important advantage, also, of being unaffected by its cargo, and will consequently be adapted better than the steel car for hauling slag and ashes.

* * *

Is It Safe to Go Into Debt for a Home?

IS IT safe to go into debt for a home? This question bothers thrifty young couples who are trying to run their home on a cash basis. They want a home of their own, but they hesitate to buy on a small down payment. They are apprehensive of "mortgaging their future."

One realtor's advice to those fearing the result of buying a home on the payment plan is most timely. He says:

"You are right in saying it is a poor policy to go into debt. Always pay cash whenever you can and go without if you have to go in debt for anything you want.

"But, so long as you pay rent you are incurring a monthly obligation which you must meet as long as you live. If you do not own your home you will always have to pay a certain amount each month to somebody. You can not escape. How much better then to pay this sum every month upon a property which some day will be your own.

"The monthly payments may be slightly larger than rent, but it is good business to seize an opportunity to buy a place even though unforeseen circumstances may force you to give it up. If the worst comes to worst, you can sell your equity for all or more than you have paid in.

"Look ahead several years. Will you have a bunch of rent receipts to show what you have saved each month or will you have a home of your own?"

It is sound reasoning which this realtor sets forth and it convinces.

What is more, it is true.

The next time a prospect raises the debt question, don't try to argue it with him. Admit that one should not go into debt, but show him that so long as he does not own his home he is in debt to the landlord.

A house renting for $25 a month sells for around $3,000. Such properties are frequently sold on a down payment of 10 per cent or $300. The remainder would be paid at the rate of one per cent a month or $30. Of the total amount, about fifty-eight per cent would be paid in four years, the eighteen per cent being interest and the forty per cent applying upon the principal. In other words, of the $1,740 paid, $1,200 goes back to the home-buyer, so virtually his expense in four years has been only $540 plus taxes and insurance.

If sickness or death are suggested, it can be pointed out that the seller will be more likely to deal leniently than a landlord. And then, if a man is a part owner of the house where he lives, he can go to a building and loan association and borrow enough upon his equity to tide him over. He can't borrow on rent receipts.—National Real Estate Journal.

The Aesthetic Aspect of Concrete Construction*

By C. F. A. VOYSEY

"Tell me not in mournful numbers,
Houses are not what they seem,
For the walls that look so solid,
Once were poured from cans like cream."

THE conservative instinct in some of us tends to strengthen our prejudices. And a fondness for hand work and the qualities of familiar building materials make one shy of the mystical concoctions that are more or less mingled with brains. Concrete seems one such that depends on conscience. The man that mixes the material must exercise his conscience, and who can measure the amount or tell its value? A brick seems more frankly to proclaim its qualities, and as with stone and timber, we know from past experience all that it can do for us. But concrete is an unknown quantity to many of us, except perhaps when used in its simplest form, as for foundations. Another element of my prejudice is due to the recollection that greed is gratified by the use of concrete construction. That is to say, the shopkeeper who is out to make money wants to seize every inch of space. He thinks the display of his wares is better for him the more vast it is. Beauty has no charm for him and quantity is of more value than quality. The shopkeeper little realizes how the mind and memory are debauched by vast crowds of articles jostling each other for attention. When a myriad of objects all shout at once, "Look at me!" we can carry away no lasting memory of anything but chaos. Concrete construction has helped in this direction. Meanness and greed I say are its parents. What can be expected from such an ancestry?

Besides the great difficulty experienced in making alterations to buildings so constructed, we find the greatly enhanced sound-conducting quality often very troublesome. And lastly, the imitative instinct in man has found abundant scope for its expression when making use of this form of construction. Buildings are made to look like stone or brick, and even at times like half-timber work. Deception gains eloquent expression in this material.

We usually find, when any new inventions first appear (like the railway train or the motor), they are made in the form of that which they are destined to replace. The evolution of things is quite evident to us all, so we may look forward with confidence to the time when concrete construction will have a character of its own and will cease to be made to look like anything that it is not.

We shall all agree, that the finest examples of building throughout the wide world have been the result of the consideration and understanding of the requirements and conditions obtaining at the time of their creation, and of the moral, intellectual and spiritual character of the people of their time and place. When these considerations have been neglectd, and partial knowledge of foreign examples has fascinated us, then our architecture has become corrupted and exotic.

Therefore it follows, as the best work grows out of requirements and conditions, it is from requirements and conditions that the character of concrete construction must be evolved.

As the conditions for concrete are quite different from those for stone, brick or timber, the mode of its expression must be different. Doors and windows are requirements, but the form they take must depend on conditions. Those conditions are chemical, substantial and functional. The ingredients of which concrete is made have their distinctive qualities, and any scientist could write a book full of facts concerning these things.

*Extracts of a copyrighted paper read at the eighty-third Ordinary General Meeting of the Concrete Institute, Westminster, S. W.

But beyond all this knowledge of conditions we have requirements equally innumerable and various. *What* do you want to build, is no more important a question than *why* do you want to build? After all the knowledge of material requirements and conditions has been gathered together and classified we shall find all this knowledge worse than useless, until we bring to bear upon it the moral, intellectual and spiritual sides of our nature.

Concrete, like our coat, may cover many useful appliances, but is useless without the soul within it. Someone said, "What is Mind—no matter; what is Matter—never mind." And yet I venture to say that there is mind of the utmost importance behind all matter, whether it be concrete or not. We cannot help conveying a spiritual something to everything we create.

The unseen is the glory of the seen. The cathedral speaks to us, and the heavens declare the glory of God. Man is born to be a creator; and as Nature is bursting with songs of praise, audible to all who will listen, so man must make his works shout with joy, and stimulate our higher nature through ministering to the spirit.

It is no use to tell me engineering is not an art. For I tell you Art is only the manifestation of thought and feeling, and it is not only possible but essential to us all. We cannot live a day without it, though many know it not. There is in everything a spiritual something, that appeals to every human heart that will listen and look. So with your concrete or your marble, the heart of man may be made to rejoice.

Bad workmen find fault with their tools, and as concrete is in a sense one of our tools, we must not quarrel with it; though doubtless some will quarrel with my simile and say a tool is the instrument by which something is created, whereas concrete is the creation itself. Now this is a great fallacy. Concrete in itself is an ugly thing. But concrete construction considered as a servant and as means to an end can be made a ministering angel. It is a good servant, but a bad master. A good servant, only so long as it is kept in its place. There are many kinds of buildings which, it could be argued, would be more suitably constructed in concrete than in any other material. But there are other kinds for which concrete would be most unsuited. It is therefore necessary to admit the unique character of concrete in order to use it fittingly and artistically.

The choice of our material, when designing a building, is like the choice of words and phrases when we are writing or speaking. It is never an affair of the pocket only. The £.s.d. argument must not be permitted to spread its poisoned gases over all æsthetic considerations, that is, if the world is to be made better.

We shall surely all agree that proportion is of vital importance to the subject in hand. The sense of relation is only another aspect of the sense of proportion. It enters into all the affairs of life and into all our calculations of fitness. It is the manifestation of personal character.

It is my firm conviction that the beauty of concrete construction must mainly consist in right proportion. What are right proportions? Each must ask and answer for himself. I refuse to have any formula forced upon me, either Greek, Roman or Gothic. It is a matter of feeling and is capable of refinement, for ever evolving and developing as we advance in spiritual, moral and intellectual culture. We want no dogmatic statements of what is in good proportion any more than we need a definition of truth or beauty. All are growths, for ever being purified and lifted higher.

It is quite true that the Greeks arrived at what we regard as perfect proportion, but it was perfection as applied to given objects. Definite groups of requirements and conditions were beautifully proportioned, but to copy these

proportions in designing the portico of a public-house is like grasping at the shadow and forgetting the substance. It is like using Latin quotations to an audience of peasants; it serves well to glorify the speaker and suggest his superiority. But oh! what a contemptible vanity it is!

There is one thing for which we must be thankful to concrete construction, namely, that it has forced upon us the necessity for a revision of the building by-laws. These foolish and mischievous irritations must be revised, if not repealed altogether, for the stupidity of veneering concrete construction so as to give it the appearance of stone is fraudulent as well as foolish. Veneer, when frankly applied, is legitimate enough, but it is open to question as to whether a concrete building cannot be made beautiful and satisfying without veneering it all over. The texture of concrete might be made as pleasant as stucco. It is quite doubtful whether we should allow the expenditure on veneer, the purpose of which is purely and only to enhance appearances. True architectural beauty, to my mind, must be wedded to structural function. Therefore the form of your concrete and mode of its use must embody elements of beauty, and not depend for its charm entirely on superimposed material of quite another nature. This suggestion can only be applied in certain cases, and is not a principle of general application. It should not be used as an argument against mural painting or mosaic. It would surely be quite possible to put up a concrete building in good proportions with the concrete walls exposed to view in naked frankness and wedded to certain features of stone or native marble. The main entrance of such a building, having an heraldically carved surface above, richly colored and gilded, would surely be a quite legitimate treatment.

The most difficult branch of this subject would seem to be suggested by the question, How far may we, for the sake of calling up association of ideas, use the arch form?

We cannot deny that the Gothic arch has a profound effect on our minds and hearts, and is structurally the practical outcome of small stones and bricks. The lintel would seem, structurally speaking, the most suitable form for concrete construction. The four-centered arch of Tudor times can be easily made in concrete, but it is surely much more complex than the lintel. The slightly-pointed arch is so dear to me that I want to modify and limit all my principles to admit it. Like all weaklings, I wish to be sound and logical, but pure feeling, which enemies sneer at and call sentiment, gets possession of me and carries me off into the clouds. We love to appear intellectually great and scientifically sound, but not at the expense of all human emotion. This little touch of inconsistency, this human frailty that abandons itself to pure emotion, is one of the most human of all human charms, and thus it comes about that it is the unseen that is the glory of the seen. The emotion is buried beneath matter, not to rot, but to regenerate.

* * *

Architect Relates Overseas Experience

Mr. D. C. Allison, who recently returned from service in France with the Red Cross, told of his experiences in the war zone at a meeting of the Southern California Chapter of the American Institute of Architects at the Jonathan Club May 13th. Mr. Allison was engaged in Red Cross work for nine months in France and had charge of the work for one division of the American army.

TEMPLE OF POSSAGNO, ITALY

Temple of Possagno, Italy

The Hun Airplanes and Artillery Showered it with Bombs and Shells, but Failed to Destroy It.

THIS photo taken by the Italian general staff photographer shows the Temple of Possagno, Italy, after the attempt of Austrian airplanes and artillery to destroy it

Possagno, a little village in the province of Treviso, was the birthplace of Antonio Canova, one of the most famous of the Italian sculptors. Here, too, lived his father, Pietro Canova, and his grandfather, Pasino Canova, both of them sculptors of note in the eighteenth century.

Antonio Canova was born November 21, 1757, and at the age of three years his father died, leaving him to the care of the grandfather. He early showed his talent as an artist, his grandfather teaching him the use of the sculptor's tools and the palette and brush, for Antonio Canova, like other great Italian artists, was of considerable talent as a painter as well as modelling in clay and marble.

His first great work was a study in marble of the Dalmatian Prince Czartoriski, posed as Amore. This beautiful piece brought Canova immediate recognition as a sculptor of the foremost rank. In that day one of the greatest and most liberal patrons of art was Giovanni Falier, of the city of Treviso, a member of one of the oldest and wealthiest Venetian families. Many a struggling young artist owed his opportunity to advance to the patronage of this wealthy Venetian.

The work of Canova attracted the attention of Falier and he sent him to Venice to study under Giuseppe Bernardi. From that day Canova's name and fame were made and soon his wonderful art made him a favorite in all the courts of Europe. His marbles, all of them of surpassing beauty, decorated the galleries of the wealthy rulers of many nations. In the rotunda of the

Temple of Possagno were gathered many of them. Canova died October 29, 1822. His tomb is in the temple

The Temple of Possagno was built in 1798 by Antonio Selva, one of the greatest Venetian architects of that period, from plans that were revised and refined by Canova. It is consecrated to the Trinity.

The exterior of the Temple of Possagno is a counterpart of the Parthenon of Athens. The interior is a replica of the Parthenon at Rome. It is constructed entirely of Italian white marble. The first eight outer columns are in Doric style, each hewn from a solid block of marble.

In the interior of the temple are twelve niches where are hung paintings of the twelve apostles, by Demin, a famous painter of the eighteenth century.

On the main altar is the picture of The Deposizione, by Canova. Under the pulpit is Canova's famous group, The Trinity, one of the finest bronzes in all Italy. It was cast by Antonio Ferrari. Behind this group lies the tomb of Canova.

The Austrian airplanes repeatedly bombed this beautiful temple from the air and the Austrian artillery deluged the sacred ground and edifice with shells. The holes in the earth in front of the temple shows how hardly the Huns strove to totally destroy this priceless work of art.

One great shell pierced the marble walls of the temple just above one of the grails. It exploded in the rotunda, wreaking dreadful havoc among the priceless groups of statuary there. Air bombs pierced the huge dome, also, and exploding in the rotunda and in the sanctuary, added yet other horrible damage and sacrilege.

In the inner sanctuary of the temple was a beautiful sarcophagus in which rested the relics of a saint. One of the Hun shells exploding near it blew away the side of the marble tomb and exposed the sacred remains and rending and scattering the wrappings and other contents about the room.

In one section of the rotunda of the Temple of Possagno stood a famous grouping of Canova statues. All were badly damaged and some totally destroyed. An effort is being made to restore some of the least damaged ones.

* * *

Watering Back-Yard Gardens

The following useful suggestions on the application of water to gardens are taken from a pamphlet, "War Gardening and Home Storage of Vegetables," issued recently by the National War Garden Commission:

A plentiful supply of moisture is essential. If there is not sufficient rainfall the moisture should be provided by watering the garden. In doing this it is better to soak the ground once a week than to sprinkle every day. Late afternoon is the best time to sprinkle. To moisten the surface is not enough. There must be a thorough wetting. If pipe connections are available a garden hose is the best means of watering. One of the most satisfactory methods is to open small furrows between rows and allow water to run into these trenches, raking the earth back into place several hours later and making a mulch, after the water has thoroughly soaked in. The sprinkling pot will serve if hose is not available, but is more laborious. Overhead sprinklers are very satisfactory. They consist of pipes mounted on supports extending the length of the area to be watered. Holes are drilled at intervals of 3 to 4 feet and small nozzles are inserted which yield a spray-like misty rain when the water is turned on. By turning the pipes and also changing the position of them it is possible to water an area of any size. In home gardens proper drainage is often disregarded. Drainage improves the soil by allowing air to enter; by raising the temperature of the soil; by rendering the soil more porous and granular; by enabling the roots of plants to grow deeply into the soil and by allowing earlier cultivation in the spring. Blind ditches, partly filled with stones or other material covered with soil, or open ditches, will be found satisfactory for the home garden. They should be along the lowest level of the garden, and have suitable outlet. Lacking an outlet, lay tile 12 inches below surface of garden, slanting toward a hole 10 feet deep and 5 feet across, in center of garden. Fill this, two-thirds to top, with stones, covering stones with clay and covering the clay with loam.

Tests of Stucco*

By J. C. PEARSON in Modern Building.

IT is my purpose in this paper to present a brief review of the stucco tests undertaken some years ago by the Bureau of Standards and continued as a co-operative investigation on a larger scale during the last three years. So far as I am concerned personally, the investigation is a most interesting one, not only because in some respects it is a baffling problem, or a series of such problems, but also because it concerns many people in many walks of life. The improvement of stucco is therefore a worthy object, and it is our purpose to provide the architect with a material freed, if possible, from certain objectionable qualities which are now inherent only in our lack of knowledge of the material and the methods of its application.

The Original Tests, 1911

The first stucco tests were started in 1911, and consisted of small panels of metal lath the majority of which were covered with cement and lime stucco in the approximate proportions of two-thirds part cement, three parts sand, and one-third part hydrated lime, by volume. A complete description of these panels was published in the "Proceedings" of this Institute for 1914, together with a progress report on the condition of the panels after two years' exposure. It is sufficient for our present purpose to recall that these panels were erected primarily for the purpose of determining the effectiveness of various treatments or protective coatings of the metal itself in preventing corrosion. These tests (which are still in progress) have demonstrated conclusively that galvanizing is the most effective treatment of metal lath for its preservation, and that a coating of asphalt or "dip" offers a sufficient degree of protection to the metal to insure its satisfactory durability under average exposure conditions. Many of the painted or dipped lath panels are still in excellent condition after nearly seven years' exposure, notwithstanding the fact that the metal is exposed on the inside and the construction not entirely weatherproof.

Perhaps the most important lesson from these original tests, especially in view of later experience, was that corrosion of metal lath is one of the minor obstacles to the development of a successful stucco. Another interesting point in regard to these panels, which were given a sand float finish, is the pleasing color and texture which has developed through the action of the weather. The surface film of cement has in many cases been entirely removed, thus exposing the clean Potomac river sand of which they are composed. This is reassuring evidence that the appearance of a good stucco will improve with age, and therein lies nature's suggestion for the proper treatment of concrete surfaces.

The Tests of 1915

In these earlier tests, however, there was much that deserved, and to some extent received, a full measure of criticism. This was particularly true of some few stuccos which did not show up well in the tests, and of certain plasters which were used on interior panels erected at the same time. Realizing that such criticism could only be avoided by the co-operation of commercial and technical associations, we organized an advisory committee of representatives of these associations, together with certain

* Authorized reprint from copyrighted Proceedings American Concrete Institute.

others who were by experience well qualified to serve on such a committee.

The members of this committee were unanimously of the opinion that stucco tests would have to be carried out on a large scale, under conditions that simulate actual residence construction. The general opinion was that the test panels would have to be large enough to contain window or door openings, and to allow the plasterer the same freedom of action that he would have on a regular wall. The minimum size of panel that would meet these conditions was decided upon as approximately 10x15 feet. With this unit as a basis the committee drew up a comprehensive programme for the test panels, including practically all the common types of stucco construction. The specifications for each of these panels were carefully drawn in accordance with the recommendations of those most familiar with the type of construction in question, and were finally approved by the entire committee before becoming a part of the programme. Without going too far into details, I desire chiefly to call your attention to the fact that nearly a year was spent on this programme, and that it was prepared with all the assistance we could obtain from experts familiar with stucco specifications.

The panels were erected during the summer and fall of 1915 and formed the exterior walls of the test structure shown in illustration. The first progress report on these panels was prepared in 1916 and was eventually published as Technologic Paper No. 70 of the Bureau of Standards. This paper, as many of you are aware, describes in detail the construction of the test panels, and embodies a report on their condition in the spring of 1916, when the panels were about six months old. The impression created by this report has not been entirely favorable to stucco, especially when we take into consideration the extreme care with which the programme was prepared and the constant supervision and inspection under which the work was carried out. This impression has been conveyed by the fact that in this report is recorded much of the detailed data gathered together primarily for the information of the committee in its study of the behavior and peculiarities of stucco. The committee has since expressed the opinion that much of this detail might better have been omitted, because it has tended not only to confuse the reader, but has to some extent proved misleading.

To illustrate this point, certain of the test panels from a moderate distance have the normal appearance of satisfactory stuccos. After spraying with water and allowing the surfaces partially to dry, there is exposed in a startling manner the numerous fine and otherwise invisible cracks, which are usually present in greater or less degree in all stuccos. What I wish to emphasize particularly is that we should not be unduly alarmed over such demonstrations, for we have ample evidence that these small defects do not contribute appreciably to the failure of stucco. They may become an injury to the appearance, however, in the gradual accumulation of soot and dirt, which makes them more or less conspicuous, especially on a surface of fine texture.

As stated in the preceding paragraph, a full description of these panels is given in Bureau of Standards Technologic Paper No. 70, and I will not attempt to give more than a brief description of the various groups into which the panels fall according to the bases on which they are applied.

Regardless of the distribution of stuccos, the concrete panels as a group have the highest rating, the plaster board panels the lowest. In these tests, the back

plastered metal lath panels probably take second place, and the gypsum block panels are near the bottom of the list. Further than this one would hardly dare go toward a definite decision as to the comparative merits of different bases, and with even greater hesitancy one might attempt to select the most satisfactory stuccos. Those of us who are most familiar with the details of these panels were considerably nonplussed over the developments, the more so because there appeared to be so little in common to bases or stuccos of a given kind that would serve to indicate where improvement lay.

Method of Finishing Critical.

There were certain outstanding facts, however, which furnished suggestions for future work, and these I will enumerate briefly before describing the panels erected the following year, that is, in 1916. In the first place there was evidence that the prevalence of craze and map cracking on most of the 1915 panels was due to the method of finishing. It had been specified that a sand float finish should be used, and that this finish should be given in the shortest possible time after laying on the finish coat. The purpose of this was to avoid disturbing the so-called initial set of the cement. In consequence the very great majority of the panels were floated when too soft, which resulted in bringing to the surface a rich mixture of cement or cement and lime, subject to high shrinkage upon drying out. We believe now that this accounted largely for the general and early appearance of fine cracks on most of the panels, with some contribution also from the use of too rich mixtures.

Another peculiarity that impressed itself upon us was the appearance of large and prominent cracks on all the panels over diagonal sheathing. These cracks invariably first appeared off the corners of the windows and running across the direction of the sheathing, and there is no question that they were brought into prominence, if not actually produced, by the shrinkage of the sheathing. The fact that these characteristic cracks did not appear on the back plastered panels, and that the latter were largely free from prominent cracks, resulted in a higher rating for this group than for the metal lath panels over sheathing.

One other consistent development in these 1915 panels is of special importance, viz.: It was noted that the stuccos on the plaster board and gypsum block panels and on the monolithic concrete panel coated with bituminous waterproofing were in poor condition, especially after they had passed through the second winter. All of these were stuccoed with the standard mixture of one part cement, one-tenth part hydrated lime and three parts sand, with only slight modifications in the method of applying. The results obtained on these panels indicate, not that this stucco is bad, but that the combination of this stucco and a weak base is bad. Field observations which I had an opportunity to make last year demonstrated this fact conclusively, that a strong cement stucco on a weak base is a common cause of stucco failure, and in practice this seems to occur most frequently in the application of brown and finish coats much higher in cement than the scratch coat, which logically should be the strongest portion of the stucco. The explanation of this failure must be sought in the well-known shrinkage of cement mortar upon drying out, and in the subsequent movements caused chiefly by varying moisture conditions.

The Tests of 1916

In laying out the programme for the second year's work, it was found most feasible to erect a sort of monitor or penthouse, providing 22 additional panels, on the roof of the original building. This of course pre-

cluded all but frame construction. The back plastered panels had shown up so well in 1915 that it was decided to include a larger proportion of these in the new layout, and only one-half the monitor or annex, as it is more commonly called, was sheathed. To minimize the shrinkage effects 6-inch diagonal sheathing was used, alternating in direction on adjacent panels. It was decided also to change the method of finishing, partly in the use of less water on the under coats, partly in waiting for the stiffening coat to develop before finally floating. This procedure, together with the use of a number of leaner mixtures, was adopted in the hope that craze and map cracks would be largely overcome. A number of special features were also included in the construction of certain panels with a view to minimizing the effects of movement of the wood frame. The annex was completed in October, 1916.

I will first outline the general results obtained, and then describe a few of the more interesting panels in this collection. We had hoped that the panels over sheathing would at least show an improvement over the similar panels erected in 1915. So far as the sheathing was concerned, however, they did not; the same peculiar cracks developed as before, and there was a period soon after the panels were completd when one could determine the direction of the underlying sheathing from the appearance of the cracks. These cracks invariably first appeared perpendicular to the direction of the sheathing; all the panels suffered in this respect, and if anything they are in worse condition as a whole than those of the year before. In this group the stuccos on wood lath are especially bad, and those containing a high percentage of lime are in decidedly worse condition than those containing a high percentage of cement. So far as this investigation has gone, then, we have about decided to condemn diagonal sheathing, unless there is some assurance of getting seasoned wood for the purpose, or of finding some other means of counteracting the shrinkage effects.

A very great improvement in finish was obtained on these panels and as a result craze cracks were largely but not wholly eliminated. The larger patterned map cracks were also very greatly reduced, and this was particularly noticeable in the case of those panels which were stuccoed with radically lean mixtures. One of these is a back plastered metal lath panel stuccoed with a mixture of one part cement and six parts limestone screenings. It is in perfect condition and waterproof even when subjected to heavy driving rains.

There are several panels on the annex in very satisfactory condition and as some of these are of unusual construction I will describe them briefly. Three of the panels were especially constructed in such manner as to free the stucco as much as possible from the movements of the frame. One of these was over wooden studs to which was attached Clin-Trus furring. This is a sort of welded wire frame to which the lath is tied, and which offsets the stucco some 2 inches from the face of the studs. The purpose in using this material was to take advantage of a certain flexibility of support for the stucco, so that if the studs twisted or buckled the strain would not be transmitted directly to the stucco. A few inconspicuous cracks have appeared on this panel, but on the whole it is in very good condition. On another of these panels ⅜-inch Hy-rib lath was wired around the studs, the lath being entirely supported in this way without the use of nails or staples. The panel is without cracks and in perfect condition. The third panel was an adaptation of the Flagg wire partition

to an exterior wall. Stout supporting wires were fastened at the top and bottom of the panel only, and then drawn taut by tying them laterally at intervals in such manner as to form a large diamond mesh pattern, upon which metal lath was wired to support the stucco. This panel contains one diagonal crack only, running from opposite corners of the window to the frieze and watertable. This crack appeared quite suddenly about six months after the panel was completed, and suggests that possibly the supporting wires, which are necessarily under very high tension, might have slipped in one or more places. In these three panels also a special type of expansion flashing was used around the trim of the windows, designed to prevent the formation of radical cracks at the corners by the pressure of the wooden trim when expanded by moisture. So far as one can judge from the condition of these panels, the flashing has been effective, and is well worthy of further investigation.

Two panels of Bishopric board were included among the 1916 panels, one covered with cement stucco, one with a magnesite stucco. The former showed the same characteristics as the original panels of this type in the development of a number of large cracks, the latter was in perfect condition during the first year of its existence but now shows some fine cracks near the bottom.

Two additional gypsum plaster board panels covered with cement stucco were also included in these tests, and, as anticipated, showed essentially the same serious deterioration as the original panels of this type. The results obtained from these panels eliminate plaster board from further consideration as a base for cement stucco. The combination is wrong, both in theory and practice.

One panel was erected on pressed steel studs, covered with 3/8-inch Hy-rib lath and stuccoed with a mixture of one part cement, four parts sand and one-tenth part hydrated lime, by weight. We expected much of this panel and it is really in very good condition, but a number of fine cracks can be detected on close observation.

The only other panel worthy of special mention is one of ribbed lath, back plastered, and stuccoed with a mixture of one part blended cement and three parts sand. The blended cement was prepared in the laboratory by grinding together equal parts of Potomac river sand and normal portland cement to about 90 per cent through the No. 200 sieve. The mixture, therefore, contains one part portland cement and seven parts sand, of which one part is very finely divided. This panel is one of the finest in evenness of color and texture, but shows a single fine crack over the bridging. This I believe was due to carelessness and could easily have been avoided. Certainly the possibilities of blended cement should not be overlooked in future experiments, for the material possesses ample strength, and provides the plasticity which is usually wanting in lean mixtures.

Summary of 1916 Tests

The deductions from the 1916 tests may be summarized as follows:

1. Diagonal sheathing of unseasoned wood is apparently an unsatisfactory backing for stucco. With only unseasoned wood available horizontal sheathing would appear to be better construction, provided sufficient bracing of the wood frame is assured.

2. Back plastered construction appears to be best for frame structures, so far as the integrity of the stucco is concerned. This carries with it,

however, a need for fuller information regarding the insulating qualities of walls so constructed.

3. Lean mixtures promise better cement stuccos, provided the necessary plasticity and density can be maintained by proper grading of the aggregate.

4. There is still need of further information as to the value of wood lath and high lime stuccos. To date the tests indicate that wood lath is not as satisfactory as metal lath, and there is no conclusive evidence that a modern hydrated lime stucco will endure satisfactorily in severe climates.

The Tests of 1917-18

Last year the committee was unanimously of the opinion that many of the original panels had served their purpose and it was planned to replace some of these with new panels embodying the suggestions obtained from the first two years' tests. The outbreak of the war, however, prevented the carrying out of the program, and progress has consisted mainly in the extension of our experimental work to include certain temporary structures erected at the Bureau of Standards as emergency testing laboratories. Three such buildings of frame construction have been erected, and others are contemplated. One of these temporary buildings is approximately 25 x 50 ft. x 14 ft. high covered with Bishopric board nailed direct to studs and stuccoed with a cement stucco of one part cement, two and one-half parts sand and ten per cent hydrated lime by volume. Special attention was given to the bracing and framing of this structure, which was done under the supervision of the manufacturers of Bishopric board. The second of these buildings is a structure similar to and alongside the first, covered with ⅜-in. Hy-rib metal lath,—back plastered and stuccoed with a mixture of one part cement and three parts sand. These buildings offer a good opportunity to compare two radically different types of construction, and while the second is decidedly better than the first, neither of them is as good as we had hoped. From a critical and investigative point of view, neither of them can be considered wholly satisfactory, and we are bound to admit that further study of the methods of applying stucco to frame construction is necessary before an absolutely reliable specification can be written.

The third building is approximately 30 x 70 ft. x 27 ft. high, and nearly a repetition of the construction of the second, viz., ⅜-in. Hy-rib lath, ribs inward, on 2 x 6-in. studs, bridged and corner braced. Special pains were taken to intermesh the ribs of adjacent sheets of lath, large-headed nails were driven at every crossing of ribs and studs, and a wire tie was added at every interlocking rib between studs. The result was as nearly a homogeneous fabric as could well be obtained on which to apply a stucco. The stucco was composed of one part cement and three parts sand, machine mixed, back plastered, and given a lightly scraped finish after floating. This, as an experiment in texture, was not wholly satisfactory on account of the lack of uniformity obtained. The sand grains were to have been cleanly exposed by acid washing, but fine cracks were detected before this treatment was applied, and the acid washing was abandoned. At the present time this building is quite satisfactory in appearance, but numerous horizontal cracks may be detected on close examination, and a few of the characteristic cracks off the corners of windows and doors have developed. In one sense this experiment was quite successful, as it seems to demonstrate sufficient reinforcing value of the ribs of the lath across even six or eight inches of vertical grain of underlying wood. The weakness appears to be rather in the vertical direction, in which the reinforcing value of the lath is almost negligible.

In the very near future, we shall have an opportunity to apply experimental stuccos on three small penthouses of tile on the roof of the new laboratory. As a tile base is particularly adapted for the use of lean mixtures, it is planned to cover two of these with such mixtures, and to carry out a radical experiment in texture on the third.

I have attempted to outline in brief space the experimental work accomplished thus for in our stucco investigation. The results obtained to date indicate that we have only begun the work, if we intend to carry it through to a successful finish. This we do intend, and while progress may be delayed during the period of the war, we are taking advantage of every opportunity to get information from the field, and when the tests are again resumed along the lines originally planned, we hope to have many suggestions on which to base the new work.

Magnesite stuccos are now coming into prominence and we are watching these with great interest, for the main question in regard to them is one of permanence. These stuccos have properties which distinguish them from portland cement, or cement and lime, at early periods, but the test of time is wanting to demonstrate their superiority over the more commonly used materials. Personally I believe that Portland cement stuccos have great possibilities, for their permanency has already been satisfactorily demonstrated. The principal defects in these stuccos are due to their peculiar volume changes, and a careful study is being made of these movements for a better understanding of them. It is hoped that by proper combination of the ingredients, and by proper methods of mixing and application, these defects will be gradually overcome.

The ordinary constituents of cement stuccos are such that by careful and appreciative manipulation they themselves may be used to produce highly pleasing effects of color and texture. Progress along these lines is toward the ultimate in stuccos of this type, and I feel that as our knowledge of the nature of them improves, it will carry with it the elimination of such defects as we have not yet been able to overcome.

*
* *

Paint Your Screens

The time is fast approaching when the fly swatter will have to be rescued from its winter hibernation; also the fly screens will have to be fitted up for their summer service. What would we ever do without the swatter and the screen?

But it wouldn't be so necessary to "swat the fly," bat the mosquito and chase the festive bug if the fly screens were protected from rust by an application every spring of good screen paint: neither would it be necessary to buy new screens so often. It is merely another case of a stitch in time saving nine: only in this case it is a few cents' worth of paint saving several more cents' worth of new screen and the bother of putting it on the frames.

But a real screen paint should be used. An ordinary house paint merely stops up the holes and generally gums up the screen. We might as well have our screens look decent; we might as well be able to see through them while protecting them; a special screen paint is the answer. It costs no more than the wrong kind.—Ex.

Y. W. C. A. BUILDING, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

WOMEN'S ATHLETIC CLUB TO THE LEFT
BLISS & FAVILLE, ARCHITECTS

A Helpful Type of Investigation

By A. B. SEGUR

THE average business man of this country has been so accustomed to destructive inquiries that an investigation of his plant which is intended to help him looks like a fairy tale. Nevertheless, this is what is now proposed by the Red Cross Institute for the Blind at Baltimore, which is under the direction of Lieutenant-Colonel James Bordley. In fact, this investigation is intended to be so constructive that, for once in the history of the business man, his place is not to be investigated except at his express desire; and in many cases the investigation is made by a representative of the firm itself, under the general supervision of the industrial engineer of the Red Cross Institute for the Blind.

Every manufacturer faces the possibility of seeing some of the men who have grown up in his business and have gained their experience doing his work, blinded in battle and apparently unfit for further service. Most of these men, however, are far from being unfit, and many of them can be re-educated and made more effective than they were before being blinded. The Red Cross Institute for the Blind therefore proposes to make a survey of every occupation in every industry in the United States to determine which are available for the blind. There will thus be made available a labor supply—namely, the blind—both of civilians and of soldiers, which may help to speed up the essential industries, and perhaps tide some of the less essential industries over the war.

The primary purpose of this survey is to determine the proper course to pursue in the training of the military blind. In addition, it will furnish a solution of the whole blind problem; the civilian and industrial blind will profit from the study fully as much as the military blind. It is not proposed to place blind people in any one firm or industry, but simply to determine what possibilities are open for the blind. Then if, after a thorough survey has been made, the manufacturer requests some of this available labor, he will be put in touch with the men who can make a success of his operations from the start.

In carrying out this survey, the following plan is being pursued:

(1) A classification will be made of the occupations and products of all the industries.

(2) A list will be obtained of all the firms in the country which fall under each classification, together with the address, the chief officers of the firm, and the number of employees.

(3) From each of these lists the plants will be picked which are the best organized and the best equipped in their line. The survey in each plant will be a very careful study of the organization of the firm, the routing of the material, and the requirements for every occupation within the organization. The plan for doing this has been worked out by the Society of Industrial Engineers and several consulting efficiency engineers. Each survey will follow the same general plan. The occupational analysis goes sufficiently into detail to enable a central commission, from the facts enumerated on the various plant reports, to pick out those which are real occupational probabilities. The work is carried on in three ways:

(a) Those plants which have efficiency forces, and prefer to make their own surveys, will do so, since their men know the conditions already, and can get the necessary information in the shortest possible time. General supervision of the industrial engineer for the Red Cross Institute for the Blind will, of course, be essential.

SUTTER STREET APARTMENTS, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT

ENTRANCE, SUTTER STREET APARTMENTS, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT

(b) Other firms prefer to have an expert on the blind from the Institute work with their time study men in making these analyses.

(c) Still others either have no time study men available, or, for other reasons, prefer to turn the work of gathering the data over to a corps of men from the Red Cross.

The Red Cross is interested in gathering only the information necessary to develop the courses of study for the blind, and desires to render only such assistance as is requested. When the possibilities have all been gathered in any particular type of industry, the blanks are sent to Washington, where a central commission sorts out the probabilities from the list of possibilities given. If it is deemed essential by this reviewing board, more detailed information will be gathered concerning them. A second sorting will then be made from this list in the light of more accurate information. The Institute is chiefly concerned with the list which will then remain. Every effort will be made to determine the best possible method of performing each operation in this list. When the best method has been determined, it will be taught to the instructor and the instructor will teach the blind soldier to perform the work properly before the blind man is turned over to the discipline of the trade selected. It is hoped that the man will not only be able to do the work as effectively as he did before he was blinded, but will be able to increase his wages over what he formerly received. This will represent a gain to manufacturer in three different directions:

First—It will enable him to take care of those of his own men who return blinded.

Second—It will open to employers a new labor supply.

Third—It will open many new methods of carrying on his operations, thus speeding up his own plant without entailing any injury to the other workmen in his plant.

* * *

Draftsmen's Unions

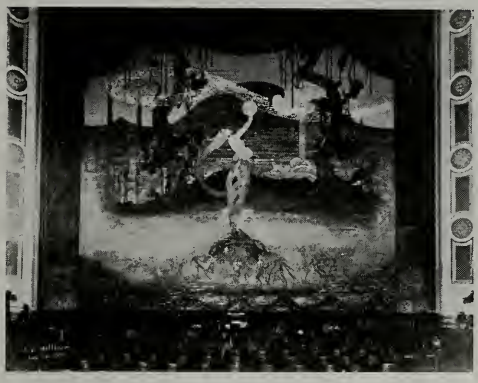
Draftsmen in many cities have joined the American Federation of Labor. This step, says Engineering and Contracting, is so novel that many civil engineers regard it with doubt if not with actual disfavor. We look to see the unionizing of draftsmen spread rapidly throughout the country. Nor are we antagonistic to such a movement. May it not eventually inject into labor unionism a new leaven that will improve the economic policies of organized labor?

Many draftsmen are technical graduates, and among them are men sufficiently well trained in economics to know that certain labor union policies are uneconomic. For example, the policy of demanding uniform pay for all workers of a given class, regardless of individual merit, is a pernicious policy. If men who have had a training in economics, but are not members of labor unions, undertake to show unionists that the uniform pay policy is uneconomic, little heed is given to the demonstration. All that they say is regarded as biased. But if the same economists were themselves unionists, their teaching would at least not fall on deaf ears.

Engineers have invaded many fields and have become members of many organizations of men, always with profit to those with whom they have come to associate. Hence it may not be entirely visionary to express a belief that when engineers become members of labor unions, they will also become leaders, and as leaders they will help to eliminate many of the bad economic policies of the unions.

Evolution of Architectural and Other Features of Moving Picture Theatres

By EDWIN H. FLAGG



ELECTRICAL EFFECT FRONT CURTAIN IN USE AT THE KINEMA, LOS ANGELES
Without light effects this curtain has the appearance of a rich Oriental Drapery.

WHILE the proper arrangement to most satisfactorily plan a dramatic theatre stage and auditorium has been more or less settled, the arranging of the super moving picture theatres—or so-called "presentation houses," is still in the experimental stage.

This is made poignantly apparent when we see big theatres, on which most expert advice was originally obtained, being radically rearranged even while they are in course of construction.

Commercially, in 1894, motion pictures were first introduced in the vaudeville theatres, later between the acts of dramatic productions, but in both instances as an added attraction, in the nature of a novelty, much the same as liquid air demonstrations.

The films were practically all of a uniform width and in fifty foot lengths. All that was required was the placing of the projecting machine in the rear of the auditorium and "throwing the picture" on a white cloth, usually the back of an old painted drop on the stage.

The machine rattled like a thrashing machine and the pictures flickered and jumped, but outside of the addition of devices overcoming these defects, and safety and stabilizing attachments, it is the same machine today, and "runs" the same identical film, sprocket holes, width and all, with the exception of the old Biograph film and machine, which was of a broader gauge.

The film being a composition of gun cotton and camphor, with a "film" of collodion on one side, it was very inflammable. The ray from the arc light intensified through the condensing lens onto the film and thence into the projecting lens was so hot where it touched the film that it would burn the flesh of one's finger if left there a few seconds. It was only kept from setting fire to the film by the fact that any single picture was only exposed to it for about one-fortieth of a second.

But the inevitable happened whenever any part of the operation went astray—and it not only usually consumed the entire film, but on exploding would set fire to other things nearby, and cause a panic, if nothing more.

This led to the invention and adoption of contrivances to automatically protect all that part of the

NEW ART TAPESTRY EFFECT
Drop curtain in Loring Theatre, Riverside.

REPRODUCTION OF A RANCH IN THE CANADIAN ROCKIES, KINEMA, LOS ANGELES.

film not directly exposed in case the film for any reason stopped long enough to be ignited.

Then municipal fire and insurance boards compelled the building of asbestos, metal or fire resisting booths to house the "machine." Instead of the natural color of white sheeting the projection "screen" were painted with, first, whiting, alabastine or similar preparations, and at a later period with a final coating of zinc white.

Five and ten years ago marks the period of screen experimenting. Hundreds of "Inventors" of "new discoveries" of what each claimed to be the ultra perfect screen were put on the market. These were divided into two broad classes, those of a flat dead white surface and the others of a reflective surface.

The flat white classes were all based on either whiting or zinc, or both, with either a glue or gypsum binding, but were tinted into innumerable tones by adding other dry pigments, such as cobalt or chrome yellow in small quantities, giving either golden or bluish white effects.

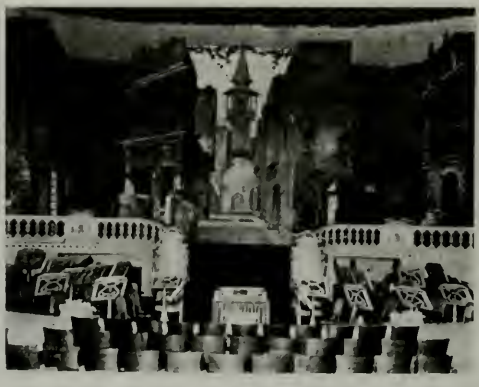
The base of nearly all the reflecting screens was aluminum powder, although many other bronzes were used.

Real mirrors were also made in one piece of plate glass, ground rough on the exposed surface and usually about eleven by fifteen feet in size, selling for six and seven hundred dollars each.

The most popular was the aluminum base screen, but it has given way to the old-fashioned—but improved—dead white, which is now the accepted screen in the most successful theatres. Imported French zinc white is the base for this screen.

The principal reason why the aluminum or reflecting screen gained such popularity was from the fact that the machine operator, being located farther away from the screen than any of the audience, and he, working in a lighted room, could see the image on the reflective screen sharper and clearer than on a dead white screen, that he would naturally insist on this screen.

The defects of this reflective screen were, first, this intense brilliancy, which, if there were any extreme right or left to the auditorium, meant an additional halation or direct light reflection in the eyes of the spectator.



STREET SCENE IN TANGIERS FOR NAZIMOVA'S "EYE FOR AN EYE," AT THE CALIFORNIA, LOS ANGELES.

Furthermore, in spite of some opinions to the contrary, there never was a reflective sheet made that did not show in greater or less degree, noticeable cloud-like forms in any white part of a picture. These are technically called "vails" or "ghosts."

A properly made dead white screen easily eliminates this defect, giving a pure, solid white unobstructed surface. This allows for more depth and naturally, through a more truthful reproduction of the photography, gives comparative tone perspective—the lines of vision in the picture giving the proper foreshortening to objects of dimensions.

PARISIAN SHOP
Setting made for Patricia Manners. Set up complete in the Los Angeles Kinema in seven feet depth of stage.

While this point was in some cases acknowledged by the operator, he would still insist upon a sharp, clear picture—from his vantage point in the booth—and he did not realize or care that the average spectator in the center of the theatre got a headache from looking at it.

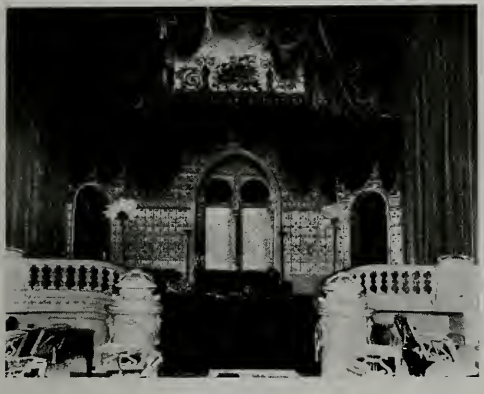
As an operator was usually the deciding factor he won his point until the consensus of opinion overruled him.

Another obscession was that the picture must be sharply cut out and entirely surrounded by dead black—either painted surfaces or hangings.

It can be noted in this connection that Grauman's million-dollar theatre stage in Los Angeles contains light gray travertine stone effect columns five feet in diameter and forty-two feet high and other details in the same color near the picture screen on the stage without detracting from the picture.

Recently light gray pilasters, part of a domed palace setting, has succeeded the former black surroundings of the "picture" on the remodeled stage at the Rialto Theatre, San Francisco.

The stage in the Kinema Theatre in Los Angeles, erected last year after diligently searching for the best of everything, has just been rearranged on entirely different lines from the original plans, although the owners of the Kinema Circuit of Theatres are among the oldest and most successful in the business. Here heavy lavender tapestry effect stage scenery masks the picture sheet.



AN ORIENTAL SETTING USED ONE WEEK IN THE CALIFORNIA THEATRE, LOS ANGELES.

The surroundings of the screen in the new California Theatre in Los Angeles are to be painted and real draperies and pylons all in a uniform gray tone.

Going back to the evolution of the architectural features, after the public had been appeased with the novelty of the pictures—they ceased to draw sufficiently to be profitable, and they were omitted from the programme of the only places where they had been shown, or only continued as a fill-in.

Their educational and incomparable entertaining possibilities had not been dreamed of, and they

were apparently on the shelf with marionettes, the stereoscope and magic lanterns.

The next stage was the "store show" period, originated by itinerant exhibitors with an outfit consisting of a portable machine and a few fifty-foot reels—each complete in itself. These reels would consist of a diversity of subjects, the earliest of which were "The Picture of a Kiss"—showing close-ups of May Irwin and Pete Daily rendering the osculation,—"The Waves Dashing on the Coast at Dover, England," "An Acrobatic Dance," etc.

These pioneers, who led a precarious existence, would rent a vacant store room—equip it with folding chairs usually rented from the local undertaker, hang their sheet in the back, darken the windows and doors and set up, literally, a "box office" in the doorway, masking the entrance with some kind of curtains and proceed to grind.

Other pioneers came in from the ranks of the "slot machine" and penny arcadesmen, whose regular vocation was being seriously hampered and in some cases abruptly terminated by the activities of the prosecuting attorneys of the cities in which they operated.

Then the "two" and multiple reelers came in, dealing with romances, but preferably impossible comedy situations and chases, trick photography and custard pies.

The inventor of the custard pie had as much to do with the success of moving pictures as did Eastman of Rochester. For the film of the custard over the surprised and hurt features of a comedy villain did as much to bring the spectator back to see it again, and this time with the entire family, as any other one thing in the film industry.

While there was a great deal of money made in some of these remodeled stores—some of the exhibitors cleaning up fortunes; taken as a whole it was like the average mining camp, there was more put in them than was taken out.

But the winners would subsequently secure additional capital and get an architect to put them up a theatre consisting of only an auditorium with, if any, an excuse for a stage, usually consisting of a proscenium arch and back wall with barely enough space between for a man to pass through.

One innovation that was perpetrated in many theatres of this period was the pest who, perched on a shelf that was called a stage, in a raucous voice from the darkness explained (?) what was happening on the screen. Another was the "sound effects" produced back of the screen or in the orchestra pit. These were supposed to add realism. Their real effect was to kill mental illusion.

Nowadays if the drummer in one of our forty-piece cinema temple orchestras would so much as hit his bass drum when our favorite slap stick comedian did a hard fall—he would be severely criticised.

A couple of years ago they also used to have impossible niches or boxes at each side of the "stage" and in one of these, between pictures, a singer would appear and render a selection accompanied by the stunt organ, which same organ was also, when properly approached, qualified to imitate any of the sounds that would be supposed to emanate from the action on the screen. In the past two or three years all this has changed.

Recently great auditoriums have been built with large, commodious stages, and every conceivable accommodation for comfort and the witnessing, in addition to the best moving pictures, either the highest type of dramatic and operatic tabloid productions or spectacular scenic exhibitions not surpassed by the regular production theatres.

And they are meeting with such success that the old type of cinema theatre cannot be located anywhere near them and survive the competition. Many such competitors, where conditions admit it, remodeled their buildings to meet the

modern requirements and they reaped much greater returns than they had ever thought possible.

Leaving out the matter of auditorium and the comfort and operation phases, which are subjects worthy of fuller and detailed mention, the stage and orchestra pit is the really vital element in the success of these nearest to perfection theatres.

While the building of regular theatre stages and pits is along the lines of accepted rules, to be successful, each cinema theatre stage arrangement must be treated by itself—particularly if it is a remodeling job. So many overlapping problems must be worked out—the one possibly the most muleish being the location of different parts of the pipe organ apparatus to get the best results without sacrificing valuable space when other space is available. Another the necessity for precautions to keep rats away from the parts of the organ which are made from goat's skin and of which the rodents can destroy hundreds of dollars worth in a short time, aside from the loss of the use of the organ till the parts are replaced.

The reason the pretentious moving picture theatre stage is so sensitive and intricate of arrangement compared to the regulation theatre stage, is that with the latter the ever evident proscenium arch was the abrupt dividing line between the audience and the stage. Now what is striven for is to retain the intimacy of the small no-stage picture theatre in a big capacity theatre containing a commodious stage and full symphony orchestra pit.

This has been attained in the new California Theatre which was opened in Los Angeles the first of the year.

While there is in this theatre a proscenium arch, it is, through the ingenuity of the designers so cleverly arranged that, instead of the heretofore abrupt division between stage and auditorium, the spectator in the audience has the feeling of actually being in and a part of the stage portrayals. This feeling of cosiness and intimacy with the entertainment features of orchestra, pictures and productions, is accomplished by many innovations of which this proscenium arch is but a part, and its curtain on raising has the same relation to this theatre, that throwing open a curtain between two parts of a large drawing room would have in a home entertainment.

But instead of its being a silken portiere brushed aside, this is a thick curtain, thirty-six feet high and fifty-five feet wide, of pure asbestos fiber woven onto steel wires, reinforced with iron pipes, and it is lifted bodily thirty-six feet straight up into a specially provided loft of steel and concrete. It is so evenly counterbalanced that it can be operated by a child. It is suspended by five steel cables operating over ten 14-inch ball-bearing sheaves, and for a case of emergency five additional quarter-inch steel link chains allow it to descend only to the level of the orchestra floor. It slides in two 72-foot slots, each four by eight inches deep, made of quarter-inch boiler plate.

Back of this curtain is the setting for the screen and the mechanical and scenic appliances with which the atmospheric, operatic, dramatic and spectacular productions will be staged.

A large orchestra pit is essential, elevated as high as possible just so as not to obstruct the picture, preferably back of the wide proscenium arch.

While this theatre incorporates most of the accepted meritorious innovations, it must be kept in mind, which same applies to all of even the latest theatres, that each of the advisors thereon had their own hobbies; that the size of the lot was established; and that some things were started, which are later acknowledged incorrect, that it is impractical to change, but which the same people would not do over again.

The modern stage, semi-elliptical in shape, should be inverted back from one proscenium side to the other, instead of the oppositely converted old style stage apron.

Divide the stage some way, by either columns or drapery, into three parts—the central part a little larger for the picture screen and the right and left sections either for singing, dramatic or scenic effects, or as is now usually done, have it masked at the back entirely around the stage and back of the picture sheet with a cyclorama drop, painted decoratively and transparent for lighting effects.

The picture screen should "fly" straight up out of sight, and the stage should have a loft high enough to make this possible.

This is imperative to the owner, unless it is in a very small community, or later someone will properly equip a new house and make worthless the first investment. With an adequate theatre satisfying a community, a newcomer would think twice before he would try to divide the patronage.

The under side of the roof over the stage should be equipped with a rigging loft sufficient to fulfill whatever demands it might be called upon to meet.

A little stock scenery should be installed—but particularly the arrangement of the stage should be such that little atmospheric settings could be supplied practically and economically when desired.

A front drop curtain fabricated to represent some heavy simple material with an elusive design, if any, worked upon it.

This is inexpensive, if properly executed, and correct. Three draperies of some other simple material, mysterious of defining if possible, should curtain each of the large openings on the stage and they should be equipped to operate either separately or altogether. The more different ways that they can be instantly draped, the more chic the effect.

In laying out this entire stage and furnishing it, the keynote of the whole is proper lighting. All the auditorium and stage lights should be on dimmers.

An expert on stage lighting experienced in the latest effects should be engaged to install and explain the system and operation of same. Although many and changeable colored rays are necessary, in the latest theatres no colored lamps are now used. Instead, gelatine mediums are arranged that not only give better results but at a less first cost for installation and less cost of operation.

Some of the latest and most successful theatres have some of these advantages and lack those that others have. The promoters of the next that are built will, as far as possible, try to incorporate all the proven points of perfection, but before their houses are in operation a week, they will see where they can make further improvements. But it requires, sometimes, the observation of a year or two to know definitely the merits or demerits of a certain innovation.

However, a careful investigation of all the theatres that are built and constantly watching their operation, when you know what you want and where to look for it, will give you as far as is possible the most successful theatre.

*
* *

Visalia Bank to Have $200,000 Home

Mr. Ernest J. Kump, architect of Fresno, has been commissioned to prepare plans for a four-story Class A bank and office building for the Visalia National Bank and Trust Company, to be erected at Main and Church streets, Visalia. The building will face the new Hotel Johnson, designed by the same architect. The structure will have a steel frame, reinforced concrete floors and walls, tile partitions and glazed terra cotta exterior with bronze grills, metal sash and doors. The architecture will be Italian Renaissance.

Building Heights in the United States

AN INTERESTING resume of the regulations in various cities regarding the height of buildings is given by Mr. M. R. Fleming of the American Bridge Company in the Journal of the Western Society of Engineers. An abstract of the paper follows:

The term "height of a building," according to the New York code, means the vertical distance measured in a straight line from the curb level to the highest point of the roof beams in the case of flat roofs and to the average height of the gable in case of roofs having a pitch of more than 20 degrees. According to the Chicago code for non-fireproof buildings, it is measured from the average established sidewalk level to the highest point of the roof thereof and for fireproof buildings it is measured from the average grade of the street frontage of the building to the top of the highest point of the external bearing walls. Other definitions differing slightly from those of New York and Chicago may be found. Cornices, parapet wall, penthouses and bulkheads are not often considered in determining height, but building codes generally place limitations upon their height and area.

Frame buildings outside of fire limits are variously limited to 2, 2½ and 3 stories, or 35, 40, 45 and 50 feet in height.

Buildings having bearing walls of hollow terra cotta or concrete building blocks are limited to 3 stories and 40 feet in height.

The code of Terra Haute has a clause, "No school building hereafter erected shall be more than two stories and basement in height." The code of Dayton fixes a maximum distance to the upper floor level for different kinds of buildings, the distance for the primary, grammar and high school buildings being 38 feet above the average grade.

A long list of cities fixes the maximum height for non-fireproof buildings at 65 or 70 feet. Kansas City (Kansas) allows but 50 feet. Detroit for a certain type allows 100 feet. In Rochester the height of a tenement house "shall not exceed by one-quarter the width of the street on which it stands."

The storm center of the whole subject of building heights is the fireproof commercial building. The factors that enter into its regulation are many and complex. Much has been written on the subject. The "Report of the Heights of Buildings Commission of New York City," 1913, is a book of 295 pages with maps, diagrams and illustrations. The literature on city planning that is becoming so abundant is at one in charging the skyscraper with being a detriment to the ideal city. The old idea that within his lot lines a man owned as far down as he could dig and as far up as he could build is being outgrown. His neighbors and the community now have an interest in the use to which he puts his property.

The arraignment against the high building, briefly stated, is that it shuts out sunlight from the street and opposite buildings, it puts the city to heavy expense in providing fire protection, water supply and sewage, it is the cause of congestion on the street, adding seriously to the traffic problem. There are also economic considerations raised by the disturbance of land values. This particular phase of the subject is ably presented in an article, "City Taxation and Skyscraper Control," by George L. Hoxie, in the "Journal of Political Economy," February, 1915.

Factors Influencing Control.—The matter of sunlight enters prominently into any proposed regulation limiting the height of buildings. How much sunlight shall be shut from the building across the street? The altitude of the sun at noon is equal to 90 degrees—(Latitude + Declination). From this equation it is easily found that on the 22d of December a building 100 feet

high in New York City on the south side of a street running east and west shuts off the direct rays of the sun for a distance of 202 feet from the base.

Two interesting charts are given in the report of a committee of the Minneapolis Civic and Commerce Association on Limitation of the Heights of Buildings. The first shows that if the south side of an 80-foot street running east and west should be built up solidly with buildings 140 feet high, similar buildings on the north side will receive no direct sunlight below the tenth floor for a period of several weeks in December of each year, no direct sunlight below the seventh floor until after March 21st of each spring and no direct sunlight on the first floor except for a few weeks in June of each year. The second chart shows that the twelfth floors of buildings 140 feet high on an 80-foot street running north and south have the greatest amount of sunlight—namely, five hours at the equinoxes—while the lower floors have the least amount—one and one-half hours at the same date.

The natural angle of light is 45 degrees. With this assumption a height no greater than the width of the adjoining street will not shut off light from the opposite neighbor. The code of New Rochelle, N. Y., has the provision, "No building shall project above a line of 45 degrees from horizontal, taken from the building line opposite on the widest street on which it fronts." However, with natural light and sunlight a certain amount of reflected light is obtained. Assuming this at 15 degrees, we have a 60-degree light angle, which the Minneapolis report referred to above states should be the maximum angle used in establishing heights. This allows the height of a building to be one and three-fourths times (1.73 to be exact) the width of the street.

It is evident that if light alone were considered in limiting building heights, tower buildings would be shut out. "One of the glories of New York is its towers." A scheme proposed by the architect, Ernest Flagg, limits three-quarters of every plot of land to a building height not to exceed one and one-half times the width of the street on which it faces, with a maximum height of 100 feet. No limit is to be placed on the remaining portion of the plot. An owner is allowed to dispose of his right to build high in favor of any adjoining plot.

It has been suggested that volume be limited rather than height. A regulation worked out for the city of Houston is, "A building may occupy the entire lot to a height not exceeding the width of the principal street upon which it faces, and not exceeding in any case 100 feet. Above this height the cubage of the building shall not exceed one-fourth of such height multiplied by the area of the lot." ("The Regulation of the Height of Fireproof Commercial Buildings," by Arthur C. Comey in "Proceedings of the Fourth National Conference of City Planning.") This regulation does not seem to have been adopted; at least, it is not a part of the present building code of Houston.

In England and on the Continent the skyscraper is unknown. The maximum heights allowed in 29 European cities range from 43 feet in Zurich to 82 feet in Vienna. (Table in Report of the Heights of Buildings Commission of New York City.)

Present Limiting Heights.—A common limitation of heights of fireproof buildings is two and one-half times the width of the street with an absolute limit. Boston has a commission on the heights of buildings. The first commission was appointed in 1904 and by an act passed that year the city was divided into two districts. No building in district "A" can be carried to a height of more than 125 feet above the grade of the street; in district "B" the height is limited to 80 feet. The height of no building in the city may exceed two and one-half times the width of the street. The Ames building,

189 feet high, and two or three others over 125 feet, were built before the act of 1904 was in force. The litigation that arose from the Boston restriction forms an interesting chapter in legal history.

Other cities in which an absolute limit of 125 feet is in force are Augusta (Ga.), Cambridge, Charleston, Kansas City (Kan.), Houston, Manchester, Portland (Me.), Seattle, Shreveport, Springfield (Mass.), Waltham and Worcester. Kansas City and Houston reduce the limit of 125 to 100 feet if the building is used for stores, factories or as a warehouse. In Altoona no building can be more than 125 feet high "except by special permission." Columbia, S. C., has a limit of two and one-half times the width of the street, with a maximum of 125 feet, "except it be used exclusively for an office building."

In Brookline the limit is two times the width of the street, with a maximum of 80 feet. Fitchburg has an absolute limit of 100 feet and Providence 120 feet. In Washington the height can not exceed 130 feet, "except on the north side of Pennsylvania avenue between First and Fifteenth streets, northwest, where an extreme height of 160 feet will be allowed." Los Angeles, Pasadena, St. Louis, San Diego, Oakland and South Bend permit a height of 150 feet, though in the latter two the height may not exceed one and one-half times the width of the street.

The code of Portland, Ore., has a classification of building heights based upon the occupancy of building and the ratio of height to least dimension at base. For skeleton frames the maximum height is 160 feet and five times the least horizontal dimension at the base may not be exceeded. In Spokane the maximum height is 152 feet; in Grand Rapids and Minneapolis, 170 feet; in Baltimore, 175 feet; in Dayton, 180 feet; in Chicago, Cleveland, Erie, Indianapolis, Newark and Paterson, 200 feet; in Milwaukee, 225 feet; in New York and St. Paul, 250 feet.

Buffalo limits the height to four times the least horizontal dimension of the building and Denver to four times its least dimension, but not to be more than 12 stories. In Lincoln the limiting height is four times the smallest horizontal dimension at the first floor level. In Seattle "the height of fireproof buildings, except as otherwise provided, shall be regulated by a successive reduction of the areas of the floors above the third floor."

The "Building Zone Resolution" of New York City, adopted July 25, 1916, provides "For the purpose of regulating and limiting the height and bulk of buildings hereafter erected, the city of New York is hereby divided into five classes of districts: (a) one times district, (b) one and one-quarter times districts, (c) one and one-half times districts, (d) two times districts, (e) two and one-half times districts, as shown on the height district map which accompanies this resolution and is hereby declared to be part hereof." As may be inferred, the width of the street is the base for determining height, although from two to five feet may be added to the height of the building for every foot it is set back from the street line. On streets more than 100 feet in width the same height regulations are in force as on streets 100 feet wide. This makes the absolute limit 250 feet, as previously mentioned.

Cincinnati, Detroit, Louisville, Philadelphia and San Francisco are among the large cities in which there is no restriction upon the heights of fireproof buildings. The code of Detroit expressly states, "Fireproof construction buildings shall not be limited in height." The codes of San Francisco and Salt Lake City have a paragraph, "Class A buildings with all wall loads above the third floor carried on the steel frame shall not be limited as to height."

The Skyscraper of the Future.—In 1910 only a dozen cities restricted the height of fireproof buildings. The number has now increased to 50. Other cities will doubtless be added to the list in a few years. A dominant factor

in bringing this about will probably be the desire to stabilize property values. In a large city without restriction and already having skyscrapers, the system of control to be adopted must, unless it be cruelly unjust, apply equally to the existing skyscraper and to new skyscraper construction. . . . The problem of equalizing the lot of real estate owners who have, and who have not, already put up skyscrapers is one of the most serious character." Had New York and other large cities taken hold of the subject twenty-five years ago, the situation would be far different from what it is at present. The obvious lesson for the smaller city is to ordain from the start the control that will probably be needed in its future growth. The State building code of Wisconsin will be quoted: "This code sets no limit to the height of a fireproof building, as it is felt that this is a matter of general community welfare rather than the safety of the individual occupants. The Industrial Commission strongly recommends that each municipality adopt such a limit, before the rise in central land values makes such action a hardship to the property owner."

The altruistic suggestion has been advanced that no single freeholder should be permitted to build to a greater height than would be permissible for all others to build in a similar way. If this were done, the height limit would be low, much less than the 125-foot limit of Boston. Imagine long streets banked solidly on each side with ten-story buildings! If extended over wide areas, the city would be uninhabitable. That such a condition should come to pass is too improbable to be anticipated.

However, ideal regulations for skyscrapers include limits for area as well as limits for height. A building that fully covers a lot is entirely dependent upon the adjacent streets and lots for light and air. If several adjoining lots are thus built upon there can be but an insufficiency of these essentials to convenience and health.

The city of St. Louis has recently passed an ordinance regulating the height, area and use of all new buildings. The city is divided into three types of districts—five heights districts (known respectively as the 45-foot, 60-foot, 80-foot, 120-foot and 150-foot heights district), four area districts and five use districts. The practical working of this latest word in city zoning will be watched with interest.

* * *

"What the Disabled Canadian Soldier Should Know"

FOLLOWING is a poster issued by the Canadian Military Hospitals Commission and the Board of Pension Commissioners, which is interesting as showing Canada's message to the returned man:

That there is no such word as "impossible" in his dictionary.

That his natural ambition to earn a good living can be fulfilled.

That he can either get rid of his disability or acquire a new ability to offset it.

That the whole object of doctors, nurses and instructors is to help him in doing that very thing.

That he must help them to help him.

That he will have the most careful and effectual treatment known to science.

That interesting and useful occupations form a most valuable part of the treatment in convalescent hospitals and sanitoria.

That if he cannot carry out his first duty by rejoining his comrades at the front, and if there is no light duty for him with the Canadian forces overseas, he is taken home to Canada, as soon as his condition and the shipping facilities make this possible.

That his strength and earning capacity will be restored there to the highest degree possible, through the Military Hospitals Commission.

That if he requires an artificial limb or kindred appliance it will be supplied free.

That every man disabled by service will receive a pension or gratuity in proportion to his disability.

That his pension cannot be reduced by his undertaking work or perfecting himself in some form of industry.

That his pay and allowances continue till he is cured or till his pension begins.

That an extra three months' pay, field pay, and separation allowance when there are dependents receiving such allowance, will be paid to all men returned from overseas and honorably discharged after at least six months' service—with certain exceptions, such as members of the Permanent Force and Federal or Provincial Civil Service, who can step right back into their old positions.

That if his disability prevents him from returning to his old work he will receive free training for a new occupation.

That full consideration is given to his own capacity and desires when a new occupation has to be chosen.

That his own will-power and determination will enable him to succeed, both in the training and in the occupation afterwards.

That his maintenance and that of his family will be paid for during the training he may receive after discharge, and for a month longer.

That neither his treatment nor his training will cost him a cent.

That his home province has a special commission to assist him in finding employment on discharge.

That hundreds of towns and villages have committees, associations and clubs to welcome him on arrival, and to help in securing a position for him.

That the Dominion and Provincial Governments, the municipal authorities and all sorts of employers give the returned soldier preference in filling vacant positions.

That the returned soldier wishing to take up land and farm it will be helped to do so, under Federal and other settlement schemes.

That the Military Hospitals Commission exists to carry out his restoration and training in Canada.

That the Board of Pension Commissioners exists to distribute the pensions provided by his country for him and his dependents.

That the Military Hospitals Commission and the Board of Pension Commissioners are in the position of trustees, appointed for his benefit, and representing the whole people of Canada.

That, therefore, he should write direct to the Commission or the Board if he needs advice or help.

Canadians are unanimously resolved that every returned soldier shall have a full opportunity to succeed. When that opportunity is put within his reach, his success will depend on his own good sense in seizing and using it.

* * *

Architect Describes New Town of Clyde

The new town of Clyde, one of the most interesting experiments in combined aesthetics, economics and architecture which the Pacific Coast has yet produced, was discussed recently at a luncheon of the Council of Allied Arts in San Francisco.

Mr. G. A. Applegarth, architect, described the scientific plan of Clyde, which was built with material aid from the Government for the employees of the Pacific Coast Shipbuilding Company near Bay Point. The project embodied the latest details of town planning. "Clyde streets avoid the monotonous checkerboard idea by following the contour of the hills," said Mr. Applegarth, "and all of them lead toward the civic center, flanked by the station and a large hotel. Parks run through the middle of the streets and there is an extensive recreation ground. A similar town called Bourneville, a suburb of Birmingham, has reduced infant mortality from 15 per cent to 2 per cent and proved its advantages in many other ways."

Mr. A. H. Markwart, engineer of the project, said that Clyde's townsite covers 186 acres, of which 100 are under mortgage to the Government and fifty had been built upon. There are sewer systems and water supply for 3000 people, though only one-tenth of that number reside there thus far. One hundred and three houses have been built at a total cost of $325,000.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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FINANCING THE PROSPECTIVE HOME OWNER

As the Own Your Own Home movement spreads from city to city, financing the prospective home owner continues to be one of the chief obstacles to the movement. Conventional banking practices in loan making and present restrictions on building and loan associations preclude the possibility that these regular sources of capital will meet the increased demands for home loans. If home-owning is to be made possible to an ever widening circle of the population, in the opinion of experts who are studying the situation for information and education service of the Department of Labor, new machinery must be devised for financing and this new machinery must provide for long-time loans, at low interest rates, made on an amortization plan. Also it is imperative that substantial and artistic dwellings are made available at the very minimum construction costs.

The dispatch shown by private interests in breaking from the profit-making conventions in this field, doubtless, will determine the future attitude of the government. If private initiative does not discover a way to permit the realization of the home-owning aspirations of the people, it seems inevitable that the government in some fashion must step into the field.

The Canadian government already has passed the legislation enabling the Dominion Government to loan to the Ontario Government the money essential to certain housing operations. The Ontario Government , in turn, is prepared to make loans to municipalities and companies incorporated under the Housing Accommodations Act, for acquiring lands and constructing houses for returning soldiers, working men and women and those of limited means who, without aid on exceptionally advantageous terms, would be unable to own their homes.

In the Canadian scheme the type of house must not exceed $2,500 in construction costs and the maximum cost of each house and real estate is not to exceed $3,000.

The municipality supervises the laying out of land, the plans for the dwelling, form of construction, etc. The loans are for not more than 20 years and at 5 per cent.

In the United States the meeting of the finance problem remains in the hands of private interests and Own Your Own Home committees in various cities are meeting the problem in various ways. In Spokane, Wash., for the most part, the conventional methods of handling building loans prevail. The financing is worked out by the seller and building contractor. Some lot owners are willing to build to suit the purchaser if the latter pays down 20 to 25 per cent of the purchase price and the balance in monthly payments over three to five years at 7 per cent. When fifty per cent of the purchase price has been paid the buyer can obtain loan accommodations on more favorable conditions from the mortgage companies and building and loan associations. In the Spokane campaign especial care is taken not to permit a person to buy beyond his possibilities of payment.

The latest reports in building permits and contracts let indicate that building construction work the country over rapidly is getting back to pre-war figures. The new normal, however, will be far ahead of pre-war figures.

The rapidity with which building and construction work is reviving indicates very clearly that building interests are convinced there is to be no material reduction in construction costs for several years, if at all. This conclusion is inescapable in view of the studies of market and labor conditions recently made by economists in the Information and Education Service of the United States Department of Labor.

REDUCED WAGES NOT NECESSARY TO RESUMPTION OF BUILDING

That a reduced wage scale is not an indispensable preliminary to resumption of activity in the building trades is the opinion of Mr. M. C. Tuttle, general manager of the Aberthaw Construction Company of Boston, who has returned to Boston after more than a year of service as production manager for the United States Emergency Fleet Corporation. Mr. Tuttle bases his judgment on some very recent investigations of large construction enterprises located at various points from New England to Florida, supplemented by careful studies carried out under his direction by the Aberthaw Construction Company. These unmistakably indicate that increased efficiency of labor is bringing down costs even while wages remain at existing altitudes.

"In the course of viewing numerous undertakings more or less closely associated with interests of the Government," says Mr. Tuttle, "I have lately been impressed to find the statement commonly made that costs of operation are beginning to show a noticeable decline. And this, almost without exception, was attributed to increased efficiency of the labor force, due in part to the opportunity for weeding out the less dependable workers, and in part to the growing desire of all members of the force to retain their jobs.

"Owing to inadequate or otherwise unsatisfactory cost systems maintained in connection with most of these undertakings, I found it impossible fully to check the statement by actual figures. Accordingly, I asked by own company to make out the cost of any one process in an operation continued over a period of several weeks. That which was selected was a piece of concrete work; the costs studied were those for the common labor employed on this work from January 7th to February 4th of the present year, inclusive. During this period the wage scale remained unaltered; but the personnel of the labor force underwent frequent changes.

"A graph of the labor cost of the work during the period noted shows a sharp and almost undeviating decline from day to day. On February 4th these costs were exactly 50 per cent less per unit than were those of January 7th. It is my belief that the experience of my company is by no means isolated; and that in almost

any labor force there lies the opportunity of realizing economies ranging from 20 to 50 per cent without interfering with the wage scale.

"This implies, of course, that there is now increased opportunity for selecting men according to their suitability for a given task, and an increased eagerness on the part of the men to make good. But this is as it should be; and the whole country ought soon to feel the effect of it in general improvement at all points. It is a case of supplanting so-called *liquidation of labor* by proper *adaptation of labor* as a means of keeping the cost of doing things within the bounds of utility.

"And in this connection it may well be urged that state of mind is often as potent a factor in ultimate labor costs as is the rate per hour. Any one experienced in handling workmen has recognized the difference in output between a cheerful, capable man, anxious to hold his place, and one who is a little disgruntled, and quite conscious that he can get another job the moment he drops the present one. Multiply either case by thousands of individual instances and I believe that there will be found, in shifts of mental attitude, the explanation of much of the variation which occurs in unit cost. And this, after all, is the element of labor which directly affects the profits of the employer."

OUTLOOK FOR ARCHITECTURAL PROFESSION

The outlook for the architectural profession is beginning to take on a brighter aspect to most of those engaged in it. War days were dark days for the architects because of the ban placed on building by the federal government and failure of the architects to gain the recognition to which they believed they were entitled, especially in the construction field. Now that building activities are reviving and some of the architects, at least, are getting busy, the future holds more promise and hope.

There is no reason why the architectural profession should not gain in prestige and strength. The architect is and always will be an important factor in building. It requires training and experience to design and plan good buildings, and there will be an increasing rather than a decreasing demand for good buildings.

Some architects had a great deal to say during the dark days about the shortcomings and faults of the profession. Some of these criticisms may have been justified. At any rate they have served to awaken the profession to a consideration of and a determination to remove the causes for complaint, so far as they can be ascertained, and to set the profession right.

If there has been any fault with the profession apparent to the layman it has been the tendency to allow ideals to overshadow service. These are the days when service is paramount in every line of business and in every profession. Recognition and success depend wholly upon it. Building is a practical business. Every structure erected today is designed to serve some definite purpose. Utility and art may go hand in hand. Utility cannot be ignored and art should not be neglected.

There is a logical sphere, therefore, for the architect and especially the trained architect and this sphere will be enlarged in proportion to the service which he renders. We believe that the future holds much in store for the architectural profession and that there is abundant reason for optimism on the part of all engaged in it who are striving for high ideals along with service.—Southwest Builder and Contractor.

NOTES AND COMMENTS

By "THE-MAN-IN-ACTION"

The Bank of Italy Competition

There is an uncommon opportunity in this competition, to take a true measure of the exterior designs, owing to the similar points of view and approximate uniformity of the perspective drawings. As a purely personal impression, all the prize designs have one curious effect

in common, each being apparently no more than a sample unit of some larger building. There can be little doubt, I think, that each design could be immeasurably improved by extension on both frontages, thus inferring a scale of design not too well adapted to the conditions. If this criticism is sound, the type of designs selected for prizes, should not form a precedent for individual buildings to which extensions are improbable. As a completed design within given bounds, that by Messrs. Weeks and Day is perhaps nearest to being satisfactory, and the winning design is the least successful in this particular, accentuated as it is by that huge cornice, which displays its row of prominent teeth in angry protest at being cramped on one corner lot when it feels entitled to take in the whole neighborhood. If Reid Bros., too, could include the balance of the block in their design, there would be a worthy end to their excellent beginning.

Where we cannot have unified design based on street-to-street proportions, it would seem the safer course to avoid massive scale on small frontages. It would be almost impossible, for instance, to find this sample-unit effect resulting from the Gothic motive, owing to the relatively small scale of the parts and the lesser emphasis on horizontal lines which it demands. This latter comment, however, is not necessarily advocating Gothic for this particular building, but it is a plea for greater attention to scale and the civic duty of designing single buildings so as to be self-contained and in good relation to present or probable neighbors. C. C.

Art and Industry

(From the Oregon Voter)

We can be truly thankful during these days of rushing reconstruction enterprises, pride in smoke-vomiting industries, satisfaction in substantial, efficient office and public buildings, that there are some men in our midst, men of vision, who combine the practical and the beautiful, ever striving to counterbalance our mad civic and industrial scramble.

Such men constitute the City Planning Commission of Portland, and the plans and propaganda advanced by their organization promises much for a greater and more beautiful city, where residence and factory districts are separated, where transportation facilities are economically located, where the avenues of homes will not be the traffic arteries, where solid, sensible development will succeed haphazard growth.

In their plans, the practical is not being sacrificed for the beautiful, efficiency is not suffering for the advancement of the artistic, for in the true theory and practice of city planning, the two are one.

Many a prosperous city of the eastern and middle western states is now regretting its original layout, bemoaning the lack of vision of its founders, who in the struggle for a present population, industries and dollars were unable to visualize their city of the future, but are now forced to content themselves with a congested business district, an intermingled residence and factory section, miles of too narrow streets, often with a trunk line railroad dangerously monopolizing a major portion of the principal ones.

City planning today is a science, a combination of the practical ideas of the engineer and business man, with the trained artistry of the architect and builder. Its plans and accomplishments mean economy, not only in routing and facilitating traffic, lowering insurance rates, reducing street paving surface, grouping of industries for co-operative shipping by rail and water and the stabilizing of real estate values, but the elimination of chance as a controlling factor in city growth.

In this connection, attention is called to the March issue of The Architect and Engineer of California, which publication is this month entirely devoted to a photographically illustrated description of the City of Portland, its present notable examples of architecture, its city planning movement, its reasons for adopting a zoning system, and similar interesting information.

In this issue appears the report of the jury, appointed by the Oregon Chapter of the American Institute of Architects, which recently decided to try to determine the most notable examples of architecture, landscape architecture and sculpture in Portland, for—"Visit as a stranger any of the great cities of this Coast, and for that matter of this continent, and ask the citizens or the Chamber of Commerce, or leading citizens, even architects, what are the most notable examples of architecture in that city, and it is almost certain they cannot tell you. Yet this is the first question that generally comes to the visitor's mind, and it is surprising that so few cities or organizations have attempted to have an answer ready."

Other contributors to this number are Portland's well-known architects, Ellis F. Lawrence and Joseph Jacobberger, on the "City Planning Movement" and "Advance of Architecture in Portland."

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Architects to Have New Quarters

The San Francisco Architectural Club has arranged to lease a portion of one of the floors in the building at 77 O'Farrell street, where the Building Material Exhibit is located. Attractive club rooms will be fitted up and a portion of the space will probably be taken by the San Francisco Chapter, American Institute of Architects.

Portland Building Materials Exhibit

Portland architects are interested in a building material exhibition, which is being planned by the Own Your Home Bureau. It is being arranged on a large scale and will be conducted for a period of at least a month. An architectural exhibit will probably be held in connection with the display.

Apartment Plans Revised

Mr. Walter C. Falch, Hearst building, San Francisco, has changed the plans from Class "C" to frame for an apartment house to be built at Pine and Stockton streets, for Mr. S. Beiss. Bids taken for a Class "C" building ran too high.

Five-story Loft Building

Messrs. Julius Krafft & Sons, Phelan building, San Francisco, have prepared plans for a five-story Class A office and loft building, to be erected on Clay street, near the Embarcadero, San Francisco, for the Wellman Estate Company. The building will cost $60,000.

Informal Competition

Competitive plans were submitted by four architects for a $55,000 town hall at Antioch, Contra Costa county. Those participating were Messrs. B. G. McDougall of San Francisco, W. H. Ratcliff, Jr., Berkeley; J. T. Narbett, Richmond, and W. A. Doctor, Martinez. On May 12th Mr. McDougall was appointed architect of the building.

New State Architect

Mr. Fred J. De Longchamps, Nixon building, Reno, Nevada, has been appointed State Architect and will have charge of the preparation of plans for all new state buildings.

$25,000 Schoolhouse

Mr. Norman R. Coulter, architect in the Maskey building, San Francisco, is preparing plans for a one-story part frame and part reinforced concrete school building for the Potter Valley School District at Potter Valley, Mendocino county. The estimated cost is $25,000.

Mr. Coulter is also making plans for a reinforced concrete apartment house to be built in the apartment house section of San Francisco.

Oregon University Honored

The University of Oregon has been admitted as the fourteenth member of the American Association of Collegiate Schools of Architecture. Dean E. F. Lawrence, of the University school of architecture, has returned from the Institute meeting in Nashville, and is greatly elated over the honor that has been extended the university.

Church and Y. M. C. A. Building

Mr. George Rushforth, formerly of Wright & Rushforth, 354 Pine street, San Francisco, made sketches for a Class "C" church to be built at Vallejo for the First Presbyterian Congregation of that city. Mr. Rushforth is also preparing plans for a two-story brick Y. M. C. A. building at Vallejo. The two projects will cost close to $100,000.

Mill and Warehouse

Mr. Omer Denny, engineer in the Holbrook building, San Francisco, has completed plans for a four-story frame mill building, one-story warehouse, boiler house, tanks, etc., to be erected at Colusa for Rosenberg Bros. Company. Improvements will cost $100,000.

Rockridge Residence

Mr. John H. Thomas, architect in the First National Bank building, Berkeley, has prepared plans for a $6500 residence to be erected at Rockridge, Berkeley, for Dr. M. S. Kimball.

Architect Reopens Office

Mr. Earl Bertz, who closed his office in the Foxcroft building, San Francisco, for the period of the war, has reopened his office and has much work on hand. Mr. Bertz is preparing plans for a $10,000 country home at Los Altos for Mr. Theodore V. Halvey, of the Pacific States Telephone Company. Plans are also being drawn by Mr. Bertz for a number of attractive homes to be built at Seacliff for the Allen Company.

New Theatre for Benicia

Mr. James W. Plachek, 2014 Shattuck avenue, Berkeley, is preparing working drawings for a one-story brick moving picture theatre at Benicia for Mr. Walter B. Crooks and estimated to cost $40,000. The theatre will seat 1200 persons.

Mr. Plachek has recently completed plans for altering a two-story frame residence at Benvenue and Derby streets, Berkeley, into five two and three-room apartments. Mr. W. W. Brown is the owner.

$15,000 Country House

Plans are being prepared by Mr. Chester Cole, architect of Chico, for a two-story and basement frame and brick veneer country residence at Marysville for Mr. Walter Lewis. The house will cost $15,000. Mr. Cole has recently let a contract for the construction of an $8,000 two-story frame residence at Yuba City, for Mr. Starr Walton.

Hospital Extension

Two additional wings are to be built to the St. Francis Hospital, on Bush street, east of Hyde, San Francisco. Plans for the improvement are now being prepared by Mr. Alfred I. Coffey, architect of the original St. Francis Hospital building. The addition will be six stories and will represent an outlay of $250,000.

Mission Apartments

Mr. Arthur G. Scholtz, architect in the Phelan building, has completed plans and taken bids for a three-story frame store and apartment house to be erected at 16th street and Albion avenue, San Francisco, for Mr. J. Jung. The cost is estimated at $14,000.

Country House Planned

Mr. George E. McCrea, First National Bank building, Oakland, is preparing plans for a country home at Capitola for Mr. H. Alan Rispon. Mr. McCrea has also made plans for alterations to Mr. Rispon's home at Vallejo and Broderick streets, San Francisco.

Stockton Architects Busy

Mr. Joseph Loseckann, Elks building, Stockton, has approximately $100,000 worth of work under way or in prospect, including two commercial garages costing $20,000 each, moving picture theatre, store and apartment house, $15,000 alterations to the Lodi Opera House, and some residence work.

Mr. Ralph Morrell has two $14,000 residences in Lodi, one for Dr. A. E. Boehmer and the other for Dr. Hugh Bolinger; additions to the August School to cost $11,000, an $18,000 residence in Newman, parochial residence at Galt, and a $14,000 house at Wesley.

Mr. Frank V. Mayo is now associated with the Kroyer Manufacturing Company, in charge of its engineering and drafting departments, Farmers and Merchants' National Bank building, and is preparing plans for the company's new assembling plant to be erected on a thirty-acre tract at Cherokee Lane, just outside the city of Stockton. The buildings will be built on the unit plan, those to be constructed this summer including a fireproof shop and a two-story office structure.

Mr. Peter L. Sala, Commercial and Savings Bank building, has let a contract for a two-story store and apartment house at California and Pine streets, to cost $13,000 and is collaborating with Mr. W. J. Wright in preparing competitive plans for new school houses.

$2,500,000 for Portland Schools

Portland will vote, June 21, on a $2,500,000 bond issue to make possible the ultimate erection of twenty modern school buildings.

Store Alterations

Mr. S. Heiman, 57 Post street, San Francisco, has prepared plans for alterations to the store at 352 Post street for the Cosgrave Cloak & Suit House. About $7500 will be expended.

Fresno County Schools

Mr. E. J. Kump, Rowell building, Fresno, is preparing plans for a $50,000 one-story stucco schoolhouse for the Oil King Grammar School District, and a $40,000 one-story concrete schoolhouse for the Claremont School District, Fresno county.

Residence Plans Being Made

Mr. J. S. Gould of Colusa is preparing plans for three residences to be built for clients in Colusa totaling $15,000, in addition to a three-story 80-room hotel. Mr. Gould will be pleased to receive trade literature, catalogues, etc.

Personal

Captain Joseph A. Kitts has returned to San Francisco. Captain Kitts was in France for over a year on detached duty, having charge of a large amount of construction work behind the lines. Before entering the army, he was for several years on the Panama Canal, and also was engaged on construction work in various parts of California.

The Architectural and Engineering Company, with main offices in the Kane building, Pocatello, Idaho, has been organized to practice the professions throughout the state of Idaho. The advisory board is composed of Messrs. E. H. Gates of Twin Falls, F. C. Sanders of Pocatello, John Visser of Twin Falls, and F. S. McGrew of Idaho Falls.

Mr. M. H. Starkweather, formerly Mashbir & Starkweather, architects and engineers, 46 N. Stone ave., Tucson, Ariz., has recently resumed the practice of his profession after nine months in the government service with the railroad artillery.

Private E. N. Curtis, who has been with the Engineers' Corps in France, has returned home and resumed architectural practice as a member of the firm of Binder & Curtis of San Jose.

Mr. Wm. Mooser and Mr. Horace G. Simpson, architects of San Francisco, have been commissioned to prepare plans for civic improvements in Grass Valley.

Mr. Sidney B. Newsom has returned from France and reopened his office in the Nevada Bank building, San Francisco.

Addition to Bank Building

A three-story Class "A" addition is to be built to the Union Trust Company's building on the northeast corner of Market street and Grant avenue, San Francisco, from plans by Mr. Frederick H. Meyer. Construction will be of steel and granite and the improvements will probably cost close to $200,000.

Opening for An Architect

The recent death of Mr. J. B. Ogborn, architect in Richmond, has left an opening for an architect of standing and Mrs. Ogborn will be pleased to hear from applicants desirous of taking up her husband's unfinished work, together with a number of excellent prospects.

Ten-Story Studio Building

Mr. J. C. Hladik, architect in the Monadnock building, San Francisco, has prepared plans for a ten-story reinforced concrete office building, to be built on Grant avenue for the Heinne Piano Company.

Los Angeles Warehouse

Messrs. Kremple & Erkes, architects in the Henne building, Los Angeles, are preparing plans for a warehouse for the California Sanitary Cannery Company.

Form Partnership

Messrs. Fay Spangler and H. B. Douglass of King City have formed a partnership with offices in the latter town. They have prepared plans for a schoolhouse and town hall at Greenfield, a new school building at King City, and a residence for Mr. Lee Dudgeon of King City.

State Capitol Buildings

Messrs. Tourtellotte & Hummell are preparing plans for two additional wings to the State Capitol at Boise, Idaho. There is about $900,000 available. The same architects are completing drawings for a Y. M. C. A. building at Boise and a bank building at Nampa, Idaho.

School Competition

Messrs. Sylvain Schnaittacher and Leo Devlin of San Francisco, J. S. Gould of Colusa, and Woollett & Lamb of Sacramento, have been invited to compete in a competition for a schoolhouse at Artois, California, to cost $25,000.

Frame and Stucco Residence

Mr. Benjamin S. Hirschfeld has resumed his practice with offices at 251 Kearny street, San Francisco. He is making plans for a frame and stucco eight-room house to be built on 15th avenue, near Geary street, San Francisco, for Mr. A. Ezekiel.

Women's Club Building

The Francisca Club will build a five-story club building (Colonial) at Sutter and Mason streets, San Francisco, from plans by Mr. E. E. Young, architect at 251 Kearny street, San Francisco.

Frame Flat Building

Mr. C. O. Clausen, Hearst building, San Francisco, has completed drawings for a two-story frame flat building for Mr. W. T. Allen at 26th avenue and California street, San Francisco.

Houses for Guatemala City

Plans are being prepared by Mr. Smith O'Brien, architect in the Bankers' Investment building, San Francisco, for a group of frame residences to be built at Guatemala City.

Addition to Factory

Mr. William Mooser has prepared plans for a one-story brick addition, 50x120, to the Ghirardelli chocolate factory at North Point and Polk street, San Francisco.

Opens Salinas Office

Mr. Ralph Wyckoff, architect of Watsonville, has opened a branch office in Salinas, Monterey county, where he is to design a new high school building to cost $150,000.

PROSPECTS

This department is intended to assist architects and engineers in obtaining a line on new work. So far as known, no plans have been prepared for any of the work mentioned, at least not at the time of writing.—Editor.

THEATRE—Turlock—A moving picture theatre and office building, 80x160, and three stories in height, is to be erected on North Broadway, Turlock, by Messrs. Richard and K. Arkalian. The theatre has been leased by Mr. A. A. Richards, formerly manager of the Modesto Theatre.

ALTERATIONS TO RESIDENCE—San Francisco—Mr. A. B. C. Dohrmann, of the Nathan Dohrmann Co., will make extensive alterations to the residence at 3277 Pacific avenue, which he has purchased from Mrs. K. Hooker. The house occupies a lot 110x107 and was purchased for $105,000.

SACRAMENTO—The East Nicolaus Warehouse Company has been incorporated with John Borgman of Sacramento, president, and will erect a concrete warehouse for grain, rice and field products on the Sacramento-Northern Railroad at East Nicolaus.

SAN MATEO—The San Mateo Sanitarium Company has purchased the Peninsula Hotel. An annex and other improvements planned. Mr. Frank Andrews, manager.

VALLEJO—The Bell Amusement Company plans to construct a moving picture theatre on the McGill property at Virginia and Highland streets.

STOCKTON—The First Christian Church has purchased the northeast corner of Sutter and Lindsay streets, 100 feet square, and will build a $75,000 edifice.

LONG BEACH—The Mercantile Company, Mr. C. A. Buffam, manager, will erect a four-story brick department store building to cost $250,000.

SALINAS—Messrs. Brown Bros. will build a new theatre, 60x275, to seat 1500 persons.

MARTINEZ—A bond election is to be held shortly to vote $100,000 for a new high school building.

SALT LAKE CITY—The Elks Club has purchased a site, 181x165 feet, and will build a $400,000 club house.

Death of J. B. Ogborn, Architect

The death of Mr. J. B. Ogborn, former city architect of Richmond, occurred at his home in Richmond, April 21, after a brief illness. Hemorrhage of the brain was the immediate cause. Mr. Ogborn was well known as an architect in San Francisco and the Bay District. For a number of years he practiced his profession in San Mateo, building for himself a fine home in the Burlingame foothills. In 1911 he moved to Richmond, where he served as city architect. At the time of his death he was a member of the Richmond City Council. He was 52 years of age and is survived by a widow and daughter, three sisters and two brothers. Mr. Ogborn was a member of the Masonic Order and the local lodges of Elks and Moose. He leaves many warm friends and his passing will be keenly felt by the civic interests of Richmond, as well as the architectural profession in the Bay district.

Fireproof Santa Barbara Home

Plans have been completed and ground has been broken for a large fireproof residence, garage and laundry at Montecito, Santa Barbara, for Mr. David Gray. Mr. Roland F. Sauter, San Marcos building, Santa Barbara, is the architect. The house will have a steam heating plant, refrigerating system, garbage incinerator, wall safes, pipe organ, inter-communicating telephones, oil, gas and electric ranges, laundry equipment and sewage disposal plant.

Architect to Make Change

Mr. Tobias Bearwald, of Fabre & Bearwald, architects of San Francisco, will become associated with Mr. Matthew O'Brien, architect in the Foxcroft building, San Francisco, July 1. Mr. Bearwald is well known to the profession in San Francisco. During the period of the war he was engaged in architectural designing for the State Harbor Commission.

Noted Eastern Architect Dies

Dr. J. C. Cady, aged 82, architect of the Metropolitan Opera House and the American Museum of Natural History in New York City, and of fifteen buildings at Yale University, and structures for other eastern colleges, died at his home in New York, April 18th.

Church, Hall and Rectory

Mr. Smith O'Brien, architect in the Bankers' Investment building, San Francisco, is preparing plans for a church, hall and rectory for St. Peter's Parish, Pittsburg, Contra Costa county. The improvements will represent an expenditure of $60,000 or more.

Changes in Tenement House Law

Important modifications of the provisions of the state tenement house law are contained in amendments to thirteen sections of the law in a bill drafted by Senator Burnett, passed by the California General Assembly and now awaiting approval by the Governor. Practically all of the modifications are in the interests of property owners, making the restriction less severe but not impairing the efficiency of the law. In the main they will tend to lessen the cost of construction of tenement houses and will simplify some of the vexing provisions of the present law. Incidentally, the amendments overturn the established plan of flat buildings by eliminating the requirements for an "independent" separate entrance to each suite and permitting the use of a common hall and stairway from which there may be an entrance to each apartment. The popularity of the flat building in California has been due very largely to the "independent" separate entrance which insures the greatest degree of privacy possible in a building housing more than a single family.

Briefly, the changes in the law contained in the Burnett bill as passed, are as follows:

Section 5 is amended to provide that an existing tenement house may be altered without becoming subject to all the provisions of the law.

Modifications are made of several definitions contained in Section 10. An interior lot is defined as a lot which is not a corner lot or a rear lot. A rear lot is defined as a parcel or area of land having no boundary line bordering on a street, omitting from this classification a lot having less than half its width on a street. A rear tenement house is described not only as one on a rear lot but also as one in the rear of another building on the same lot.

To the definition of a semi-fireproof tenement is added specific provisions for metal lath or approved plaster board requirements which are practically the same as those now required by the Los Angeles city building ordinance for Class C tenement houses, thus practically classifying Class C buildings as semi-fireproof. The definition of a wooden tenement house is likewise changed by omitting the requirement for metal lath or approved plaster board in hallways.

Section 11 is changed to permit the erection of a tenement house on a rear lot. Section 12, relating to the height of tenement houses is amended by inserting a provision that a "building may step up or down to follow the grade" and the addition of a clause stating that "when the ground upon which the walls of a tenement house are built is above the street level, the average level for the ground adjoining the walls may be taken instead of the curb level for the height of such structure."

Under a revision of Section 25 only one intake is required for an inner court, this intake to be not less than 3 ft. wide and 6 ft. 6 in. high. The present law requires intakes proportional to the area of the inner court.

In Section 28 the requirements for an 18-in. space between the floor and the ground and for construction of rat-proof floors are eliminated. Measurement of floor areas for kitchens and bathrooms, as set forth in an amendment to Section 29 are to be taken "from finished wall to finished wall." This means that certain built-in features will not be considered as encroaching on floor areas.

Section 30 is modified to permit windows to open on to a screen porch more than 7 feet in depth, but only 75 per cent of the area of windows opening on to such a porch shall be counted in making up total window area for the room involved.

A slop-sink may be installed separately without window if the compartment containing it is provided with intake and vent, under an amendment to Section 32. A shower bath may also be installed in a separate compartment without a window under similar conditions provided the apartment contains a bathroom fitted with bath tub.

Blind halls and corridors are permitted by an amendment to Section 34, on condition that they are provided with a vent to the roof. Section 36 is modified so that a public corridor may be considered a suitable access to a bathroom or water closet within the apartment as required by this section.

Special provisions are made by amending Section 71, for the drainage of open areas for basement windows and open areaways for basement stairways. Three systems are described, namely perforated or porous tile pipe sunk into the ground; cellar drainage pumps and gravel or boulder reservoirs. No drainage will be required if the areas are covered by hinged watertight covers or door flaps. Drainage of yards, courts and passageways is only required when the natural grade of the lot is above the level of the adjoining street or alley.

The Same Here

Omaha, April 9, 1919.

Editor The Architect and Engineer:

Friend Jones:—How are you? Are things stirring on the Coast? I haven't followed your reports very accurately, but it seems to me that you folks are in about the same shape we are here and in fact the folks are all over the country. Hereabout there's a tremendous amount of building that will have to be done, needed. Homes are scarce, rents are high, factories needing extension, and yet everybody hanging around and waiting for a drop in prices and everyone who could drop prices claiming that it's labor that keeps them up, and then labor says it'll be hanged if it'll make a cut. So there you are. A few materials are making a break and I'm hoping it'll become contagious and then things will start. People are like sheep. If some one starts building, then everybody will go daffy on it and they'll rush us to death.

Sincerely,
F. W. Fitzpatrick.

Reinforced Concrete Garage

Mr. John Parkinson, 420 Title Insurance building, Los Angeles, has prepared plans and specifications for a two-story Class A reinforced concrete garage building to be erected at the corner of Eighth and Alvarado streets; owner's name withheld. The building will be 100x166 feet, and will have reinforced concrete frame, walls and floors, cement plaster finish, plate glass windows, composition roof, metal and wire glass skylights, elevator, plumbing, wiring, etc.

Designing School Buildings

Mr. Eugene Mathewson, Cory building, Fresno, is preparing plans for three school buildings. One is for the La Vina school, to cost $15,000, another for the Frazier School District in Kings county, to cost $10,000, and the other for the Easton School District in Madera county, to cost $12,000.

Phoenix Elks to Build

A six-story lodge and business building, to cost $300,000, is to be constructed by the Elks Lodge of Phoenix, Arizona. Plans are being prepared by Messrs. Lescher & Kibbey, architects of Phoenix.

Apologies to Mr. Gould

Editor The Architect and Engineer:

I read your clipping from the Colusa Sun in the April number, referring to Mr. J. S. Gould, architect, who has been commissioned to design a three-story hotel in that town. The item was characteristic of the enthusiasm of a small country daily, and I assume that in reprinting it you did so without any intention of injuring Mr. Gould's reputation or hurting the feelings of his many friends.

It was probably intended as a good joke, but as everybody does not read from the same angle it seems to me that in justice to Mr. Gould there should be some explanation.

The architectural profession in San Francisco probably does not recall Mr. Gould's participation in the city hall competition, since his name did not appear as one of the contestants. Mr. Gould was associated with Mr. J. R. Miller at the time and the Miller plan was awarded a second prize. Later on Mr. Gould was employed by Messrs. Bakewell & Brown in the final working drawings for the now completed city hall building. Mr. Gould was also at one time employed in the office of Mr. Frederick H. Meyer, and his last work in San Francisco was on the Emporium service building, Mr. Maurice Bruce, architect. Mr. Gould designed all the buildings on the Moulten Ranch, which are a great credit to him. So much for Mr. Gould's career, which is, indeed, one others may envy. ARCHITECT.

[EDITOR'S NOTE.—Surely there was no desire to humiliate or embarrass Mr. Gould by publishing the little squib from the Colusa Sun. Frankly, Mr. Gould's identity was not known to the editor and the heading, "Some Architect!" was inspired by the belief that the "Eulogy" of Mr. Gould referred to a contractor (not architect) in Colusa who had been commissioned to design the hotel. It was not thought the town was large enough to support a first-class architect. Now that Mr. Gould's identity is established we want to say that he is a most estimable gentleman, and what hurts most is the discovery that Mr. Gould has for years been a constant subscriber of this magazine.]

Granite Coming Into Its Own

The outlook for the California granite dealers is more hopeful than for several years. Prospects for the use of this material on buildings to be erected this year or next and running into the millions are most favorable. The list includes the new $1,000,000 state building in the Civic Center, the Department of Health building in the Civic Center, San Francisco; the two Capitol Extension buildings, Sacramento, the extension to the Metropolitan Life Insurance building, San Francisco, the office building for Mayor Rolph on California street, near Sansome; additions to the Union Trust Company building at Market street and Grant avenue, the Federal Reserve Bank building, Sacramento and Sansome streets, and the new Bank of Italy building, San Francisco.

An Unsplittable Oregon Pine Board

A new idea in lumber has just been launched.

It has always been known that a piece of veneered wood gains in strength and stiffness over a simple solid board by having the outside veneer glued with the grain running in an opposite direction to the core. This idea has been followed up by a firm of well known hardwood lumber dealers of San Francisco, and after a number of years of experiment they have succeeded in obtaining a product which fulfills all the requirements of an Oregon Pine Board which will not split and which can be used for a thousand and one purposes.

This product has been named Wybro Board. It is made with three layers of Oregon Pine or Douglas Fir glued together with a moisture resisting glue. The outside layers run in an opposite direction from the core, thus giving Wybro Board the qualities of non-splitting, stiffness and strength. The thicknesses are 1/4 inch and 3/7 inch, which give lightness, and the sizes of the sheets range from 24x48 inches to 36x96 inches.

Wybro Board comes rough, like any pine or redwood board, and can be sawed or sanded the same as a pine or redwood board, but it has the added quality that it will not split. The uses of Wybro Board are multitudinous. In almost any place where a piece of lumber is required Wybro Board will serve the purpose better than a solid board and, besides this, Wybro Board can be used to great advantage for many purposes where a solid board will not answer.

For all purposes such as hampers, boxes, trays, display boards, partitions, cabinets, cases, portable buildings, etc., etc., Wybro Board is without parallel for strength, lightness and economy.

Contracts on Percentage

W. C. Duncan & Company, Sharon building, San Francisco have been awarded the contract to build the Chas. W. Clark house at Pebble Beach, from plans by Messrs. Bakewell & Brown. The same firm has a percentage contract for alterations to the residence of Mr. Seward McNear at Ross, Marin county, from plans by Messrs. Howard & White, Lick building, San Francisco.

Six-Story Building

Livingston Bros., Geary street and Grant avenue, San Francisco, have commissioned Mr. G. A. Lansburgh to prepare plans for a six-story building to cost approximately $200,000, on property which they have leased from the Whittell Estate and having a frontage of 40 feet on Geary street, a depth of 142 feet and a frontage of 60 feet on Manila street. Construction will be Class "A."

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Has the Los Angeles Municipal Cement Plant Been An Economic Success?

TEN years ago a municipally owned cement plant that cost $890,000 was put into operation by the city of Los Angeles. The property is about to be sold, $450,000 being the minimum bid that will be considered.

Designed with a daily capacity of 1,200 bbls., this cement plant was built to provide cement for the Los Angeles aqueduct, the theory being that the cement manufacturers were asking so exorbitant a price that the city would profit by making its own cement. Evidently the Aqueduct Bureau still believes the theory was justified by the results, even though the plant may be sold at half what it cost; for in a recent issue of "Pacific Municipalities," Mr. Burt A. Heinly, secretary to Chief Engineer Wm. Mulholland, Department of Public Service, Los Angeles, says: "The Aqueduct Bureau never contended that it could make a better cement than any private company, nor did it assert, for reasons explained in the following, that a municipal mill could produce cement at a cheaper price per barrel. It did claim, however, and with good reason, that it would manufacture at a cheaper price per barrel than the price at which private mills would be willing to sell if the city should not own and operate a cement mill.

"It has been the claim of Aqueduct engineers, and in this one cement manufacturer has candidly agreed, that even had the Monolith plant not ground a single barrel of cement, it paid for itself in protecting the city from exorbitant prices."

On the other hand, California cement manufacturers have contended that this municipal cement plant has proved to be a very unprofitable experiment in municipal ownership. It has produced less than 1,200,000 bbls. during its 10-year life. If the plant is sold for $450,000, a depreciation of $440,000 will have been suffered, the interest on the investment at 5 per cent simple interest for 10 years amounts to another $445,000. The sum of interest and depreciation alone would therefore total $885,000 or about 75 cents per barrel.

At the time the city was manufacturing cement, private companies bid as low as $1.12 per barrel at their mill; and after the city ceased (in 1909) manufacturing cement it paid $1.45 per barrel at Mojave for 200,000 barrels as a result of threatening to resume manufacturing. Prior to making this threat the cement manufacturers had bid $1.85 per barrel. That the city paid $1.45 per barrel rather than resume manufacturing cement is significant as to the cost to the city for operating its own plant.

We hold no brief for the California cement companies. It may be that they did conspire to hold up cement prices. But we are a long way from being convinced that the building of this municipal plant was justified.

The city may point to the 40 cents per barrel saved on 200,000 barrels purchased in 1909, or a total of $80,000, as a result of its threat to resume manufacturing cement. But what of the annual $88,500 interest and depreciation on the plant every year of its 10-year life?

The city says that at the time it was receiving bids of $1.12 per barrel for cement at the mills contractors were paying the same mills $1.86 per barrel. The apparent inference is that the cement companies were therefore making an excessive profit of the difference between $1.12 and $1.86, or 74 cents per barrel. Yet this is by no means a sound conclusion. The cost of producing anything with a plant decreases as its load factor increases. Hence a plant operating at, say, half its full capacity and making only a fair profit on a price of $1.86 per barrel might be able to make a fair profit at $1.12 per barrel on every barrel in excess of its 50 per cent load factor output. Perhaps it is not an ideal thing to make a price of $1.86 to one buyer and a price of $1.12 to another buyer, but it may be that the total profit resulting from these two prices is not an excessive profit.

Civil engineers inexperienced in industrial economics are prone to see reprehensible practice whenever they see two different unit prices for the same product of the same company at the same time. Such engineers would do well to study not only the effect of load factors upon production costs but the theory of regarding as a by-product all production in

excess of an existing average. It is this by-product theory that so often has held American steel manufacturers to sell at a lower price in Europe than in America. It is this same theory that has led electric companies to sell current during "off peak" hours at less price than during peak load periods. It is this theory that led Vail to introduce the "night letter" message that is one-fifth the ordinary 10-word day message price. It is this theory that explains many of the otherwise puzzling discrepancies in railway freight rates.

The average civil engineer knows very little about load factors, and even less about the pricing of products or services so as to increase load factors. It behooves him to study such economic matters before he condemns manufacturers for quoting different prices.

Los Angeles engaged in the business of making cement, acting under the advice of Mr. Mulholland. Nearly a million dollars was invested in a cement plant that has been idle for many years. Was this experiment justified? We doubt it. After the plant is sold it would be well were the city to employ a disinterested engineer to investigate and report not only the actual cost of the cement made in this plant but the saving to the city in the cost of cement purchased from private plants. A great experiment in municipal manufacturing should not be allowed to end without definite knowledge, from an impartial source, as to its economic justification.—Engineering and Contracting.

Idaho Engineers to Be Licensed

The Idaho legislature during its recent session passed House Bill 209 for licensing civil engineers. The act defines civil engineering as "the practice of any branch of the profession of engineering other than mining, metallurgical and military" and further states that "Said profession embraces the design and supervision of the construction of all public or private utilities except those in connection with mining operations exclusively and other works which require experience and the same technical knowledge as engineering schools of recognized reputation prescribe for graduation."

Powers and duties of the department of law enforcement in relation to practice of civil engineering, are to conduct examinations to ascertain the qualifications and fitness of applicants to practice civil engineering; to pass upon the qualifications of applicants for reciprocal registration from other states; to prescribe rules and regulations for holding examinations, to determine what shall constitute a school, college or department of the university for civil engineers and the reputability and standing of such schools (the requirements of the University of Idaho for the degree of civil engineering are adopted as the standard) and to conduct proceedings to revoke certificates.

Seven persons, each of whom shall be a registered civil engineer, a resident of the state for at least one year immediately preceding his designation, who shall have had at least 10 years' active practice and shall be of recognized standing in the profession, are to be appointed to hold the examinations.

Appointments are to be made after giving due consideration to recommendations by members of the civil engineering profession and organizations. For every day of actual service members shall be allowed a per diem allowance of $5.00 and mileage of ten cents a mile one way for all distances necessarily traveled in the performance of their duties.

For residents of the state the fee is to be $10 and for applicants from the outside $25. Applicants shall be of good character, over 21 years of age; have been in active civil engineering work as assistant or otherwise for at least six years or shall be graduates of a recognized school.

To any person having these qualifications and who has been actively engaged in the practice of his profession in the state of Idaho for a period of one year prior to the taking effect of this act shall

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Any person who is registered or licensed to practice civil engineering under the laws of another state whose minimum requirements are not less than those of Idaho, may in the discretion of the department, be granted a certificate of registration without examination.

A civil engineer in a state which does not provide for the registration or licensing of civil engineers, may, upon presentation of satisfactory evidence that he is qualified as provided in this act and has practiced civil engineering for an additional period of not less than four years immediately preceding his application, be granted a certificate of registration without examination.

The scope of the examinations and the method of procedure shall be prescribed by the department. If a candidate fails on first examination, he may, after an interval of not less than six months nor more than one year, have a second examination without additional fee.

Every certificate of registration issued under this act shall be subject to revocation by the department upon any of the following grounds: 1, Fraud or deception in procuring the certificate of registration; 2, fraud or deception in practice, or 3, conviction of a felony.

The act does not apply to engineers working for the United States government; nor to an engineer employed as an assistant to an engineer registered to practice civil engineering in the state; nor to non-resident engineers who come into the state for consultation, collecting information or to give expert testimony in court.

The act became effective May 1, 1919.

Oregon Society of Engineers

The March meeting of the Oregon Society of Engineers was one of the best attended and most interesting that has been held for a long time.

Mr. Bowers, Pacific Coast representative of the Engineering News-Record, was introduced by President Cunningham, and after telling of the good results obtained in San Francisco engineering meetings by getting the entire assembly to join in singing popular songs, proceeded to demonstrate his proposition in a very satisfactory manner.

Mr. Riddell, who has been making investigations for the underground water resources branch of the U. S. Geological Survey, told of the interesting and valuable developments along this line.

A bowling match between the architects and engineers was won by the engineers, who, it is claimed, had practiced hard for the match before challenging the architects.

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Passing of Mr. Hermann Schussler

Mr. Hermann Schussler died of heart failure April 27th at his home at 1905 Van Ness avenue, San Francisco. He was born in Germany in 1842 and was educated at the Polytechnique of Zurich, Switzerland, and came to San Francisco in 1864, largely, as he frequently remarked during the past five years, because he did not like Prussianism.

He entered the service of the Spring Valley Water Co. and continued in its employ for 51 years, most of this time as chief engineer for the company. During this period he had charge of the construction of practically all the present system of the company, as well as the examination and acquisition of the various undeveloped watershed lands owned by the company. He did not, however, have anything to do with the construction of the earth dam at Calaveras, having recommended a masonry dam about one-quarter mile down the canyon from the site finally chosen.

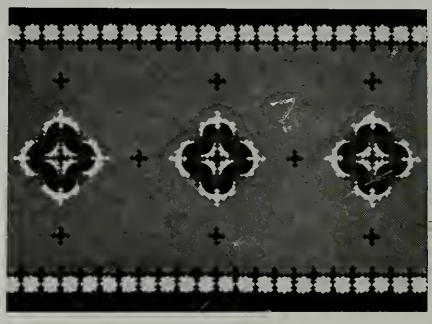
Besides his work for the Spring Valley Water Co., he had a large consulting practice, being connected with many projects in the Pacific Coast states as well as Nevada and Hawaii, specializing on hydraulic work. In particular, he probably had charge of the construction of a greater mileage of large riveted iron and steel pipe-lines than any other engineer. In 1915, Mr. Schussler severed his connection with the Spring Valley Water Co, and devoted himself entirely to his private practice, which he continued actively until his death. He particularly enjoyed calling attention to the fact that some of his clients were the sons and grandsons of earlier associates. He is survived by his widow, and by three children, Mrs. Martin Preuss, Miss Alice Schussler, and Dr. Hermann Schussler.

American Society

At a meeting of the Portland Association of Members of the American Society of Civil Engineers in the University Club March 20, Mr. Robert A. Cummings of Pittsburgh, chairman of the committee of the American Society of Civil Engineers "to Codify Present Practice on the Bearing Value of Soils for Foundations," and also a member of the Committee on Development, spoke of the work of the local associations of engineers in Pittsburgh.

Engineers Wanted

Open competitive examinations for highway bridge engineer, salary $1800 to $2100 per year, and junior highway bridge engineer, salary $1200 to $1600, will be held by the United States Civil Service Commission the latter part of this month. Open competitive examinations will be held by the commission on May 29 for chief of road survey party, salary $1800 to $2100; transitman, salary $1200 to $1800, and highway draftsman, salary $1200 to $1800.



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Portland Cement Men in Session

The Portland Cement Association held its spring meeting in San Francisco the week of April 23, there being a large attendance of members. Many who came from a distance were accompanied by their wives and daughters. The meetings were well attended and thoroughly enjoyed. A dinner at the Palace hotel the evening of April 23 was a most enjoyable affair. Mr. Lawrence W. Harris officiated as toastmaster and the speakers were Mr. Theodore A. Bell and Mr. Charles K. Field.

The following were the invited guests of the evening:

Mr. Austin B. Fletcher, State Highway Engineer, California Highway Commission; Captain H. D. Hynds, Emergency Fleet Corporation, U. S. Shipping Board; Messrs. W. Leslie Comyn, President San Francisco Shipbuilding Co.; Alvin A. Horwege, Engineer, United States Shipping Board, Emergency Fleet Corporation, Concrete Ship Section; D. E. Watkins, Secretary California Auto Association; B. F. Mackall, Comyn, Mackall & Co., Shipping; John D. McKee, President Mercantile National Bank of San Francisco; John G. Sutton, Vice-President and General Manager Ocean Shore Railroad; Charles F. Stern, Superintendent of Banks; Emmett Phillip, California Highway Commission; C. A. Whitmore, California Highway Commission; E. Whitehead, Associated Oil Co.; William Joyce, President Federal Land Bank; George C. Walker, Vice-President P. J. Walker; Roy S. Folger, Royal Insurance Co., J. A. McCarthy, Vice-President and General Manager Old Mission Portland Cement Co.; R. L. Vance, California Portland Cement Co., Los Angeles; Percy E. Towne, California State Auto Association; Fred Muhs, San Francisco Bridge Co., and Mr. Jos. Kierulff of The Architect and Engineer.

Pioneer Steel Man Dead

Mr. John Llewellyn, vice-president of the Llewellyn Iron Works, Los Angeles, died in New York City, April 17. Mr. Llewellyn went east several months ago on business for the company and was then apparently in good health.

Mr. Llewellyn was one of four brothers all of whom were active in building up the present extensive business of the Llewellyn Iron Works. He was born in Wales forty-six years ago, his father, David Llewellyn, coming to the United States when he was six years of age and locating at San Francisco where he established an iron foundry.

Pacific Steel and Boiler Company

Architects and engineers having occasion to specify power boilers and appliances and heating equipment will find it to their advantage to communicate with the Pacific Steel & Boiler Company, of which Mr. A. W. Merrill is the manager, with sales offices at 322 Monadnock building, San Francisco. The company's general offices and plant are at Tacoma, Washington, with a Southern California branch in Los Angeles. Its products include low pressure steam and hot water boilers, low pressure down draft boilers for soft coal, hot water circulating tanks, tank heaters and pneumatic and storage tanks.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Contractors' Organizations and What They Can Accomplish*

By D. A. GARBER,

President of Associated General Contractors of America.

NEARLY all of the contracts and specifications prepared for public works throughout the United States places all risks and responsibility upon the general contractor and are conspicuously one-sided and unfair and in many cases have caused great and unnecessary loss to contractors.

The only remedy for these and many other evils that could be mentioned is organization. One of the chief concerns of The Associated General Contractors of America, which was organized last November in Chicago, is for the promotion of local, state or sectional associations of general contractors, since many of the reforms desired can only be secured through the concerted action on the part of the contractors concerned and the national body that co-ordinate the efforts of all local and sectional associations to realize these reforms.

Associations of this kind should have high ideals as in accordance with the purposes set forth in your proposed constitution:

First: To promote better relations between private owners and public bodies, their architects and engineers, on the one hand, and contractors on the other.

Second: To maintain high professional standards in the conduct of work.

Third: To combat unfair practices.

Fourth: To encourage efficiency among contractors.

Fifth: To support contractors and contractors' associations in efforts to rectify conditions of an unsatisfactory character.

Sixth: To encourage those methods of contracting for work which relieves the contractor of improper risks.

Seventh: To encourage sound business methods tending to raise the standing of contractors generally in the business world.

These are high and commendable ideals and if faithfully carried out will result unquestionably in great benefit to the contracting fraternity everywhere.

It should have a code of practice—an unwritten code, if you please—which would from this time on stop throat-cutting, which has been one of the faults of contractors in the past.

No honorable contractor objects to fair and legitimate competition, and no association or organization should be formed for the purpose of destroying fair competition, but the competition to which the average contractor has been subjected in the past is harmful to both owner and contractor. Unquestionably a proper code of practice would establish the contracting business in its rightful place.

There should be a committee also on mutual aid for the exchange of informa-

* From an address March 26 before the Northwestern Association of General Contractors, St. Paul, Minn.

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tion concerning proper cost accounting, reliable estimating, fair and reasonable allowance for depreciation of plant conditions covering rentals and terms as applied to equipment. In fact, a general clearing house for the convenience and information of contractors generally. This association should also co-operate with all other associations which are formed for the betterment of business. They should be in close touch with the American Society of Civil Engineers, the Railroad Engineers and such other bodies as are interested in construction work generally. This association should protect its members against conditions arising from unfair legislation bidding conditions, specifications, plans, contracts, supervision and unfair labor conditions.

This association also can use its influence not only in promoting legislation advantageous to contractors, but in defeating legislation that is detrimental to their interests and detrimental to the interests of the country at large.

The bill prohibiting immigration, introduced at the last session of Congress, should be contested by every contractor and other business man in the country. That is a bad and a vicious piece of legislation. There is a great demand for this bill, for they say we must keep out of this country the Bolshevism of the old world; we must keep ourselves free of them for four years, but it admits into this country the student, the musician, the artist and the traveler. That is what that bill does; it prevents the entry into this country of the common laborer, the man who actually works here, who makes a good citizen and who is a constant worker. It keeps him away, and lets in that long-haired aggregation of students, which includes the agitator. It is the duty of every one of you as Americans to oppose that law because it is class legislation of the worst kind.

They will tell you that one of the great reasons why we don't want these people in this country is because the return of the soldiers is at hand and we want places for them. Now, as a matter of fact, the type of work that this class does is not now and never was and I hope never will be what the returned soldier has been doing and is not connected with that class of labor at all. Let it be done by this same class that has always done it before and has done it well. Now, I think your organization can do a great deal towards these relief bills.

The railroad contractors in this country have been called upon to stop work. Now, I believe the things we are all interested in is to get something started. We have been in a desperate condition and the country is in a bad condition now.

We have got to maintain that prices are more or less stable now. We know that labor is stable and is going to remain so more or less and possibly there will be an increase and the man that does the work is entitled to a legitimate wage, just as much as we. He has the same heart and the same desires for home and family and for the luxuries of life that we have. That is right and proper. It isn't for us to discourage him, but there is another side to the thing. When you, either as agent or owner, pay him $10 when you used to pay him $5, all you ask of him is efficiency to a point of honesty that he shall give you back 100 per cent in labor for the additional money you give him. That is all you can ask. That is the situation of the labor proposition.

Men in your walk of life in order to study the labor situation and be more or less familiar with it must be friendly with your men, but try to increase efficiency wherever you can. Now, I hate the word efficiency, that is camouflage to talk about it the way it has been exploited in the past, but efficiency to the point of honesty and not to the point of exacting more from him than you pay him is all right and proper, for you should get from him exactly what you pay for, and then you are honest with him and he is honest with you and you will find there is no more trouble!

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CONSULTING ENGINEER

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Why Not Open Bidding on Building Contracts?

From Contract Record, Toronto.

A FEW days ago tenders were submitted on a building job running into some $20,000. The lowest competitive tender was close to $4,000, the highest about $7,500—a discrepancy of 87½ per cent. In the other trades the difference, though not quite so great, was still far from indicating that there was any definite system in the method of figuring these tenders. One thing, however, was plain—either the low tender meant a loss, possibly a very considerable one, or the high tender meant an undue profit. Whichever it was, though, the owner saw only the one possibility—all the tenders were too high except the lowest. Indeed, the lack of uniformity in the amounts gave him the impression that the contractors were all pretty much guessing and that probably even the low tender was away too high.

What an unsatisfactory condition, after all, this is, to exist in the building trades—making a living by averages—losing money on one job and making it up on the next. Surely it is a condition that can be remedied.

In various parts of the continent the solution of the difficulties noted above has been found in what is known as the "Open Price Plan." Briefly stated it is simply an exchange of figures among the contractors who submit tenders on any piece of work. That is, suppose there are three sub-contractor carpenters who submit tenders on a job for $2,000, $2,500 and $3,000—no other tenders submitted—the plan provides for giving each of these sub-contractors the figures submitted by the other two just as soon as these tenders are in. Then what happens? Sub-contractor No. 1 sees that he is $500 lower than No. 2 and $1,000 lower than No. 3 and says to himself, "I wonder if I've made some mistake." He then goes over his figures more carefully and finds, perhaps, that he has omitted certain details. Contractor No. 2 gets thinking, too, and perhaps calls up No. 1 and they compare items. Finally No. 3 says to himself that these other fellows surely must have some secret of doing business cheaper than he can do it, and so on. The net result is, as has been shown by experience, that they all get together with their legs under the same table and "talk things over."

Where this plan has been given a fair trial, it has been shown to have two very definite results:

1. When the contractors get together to discuss their items and figures, there is finally evolved a "system" of comput-

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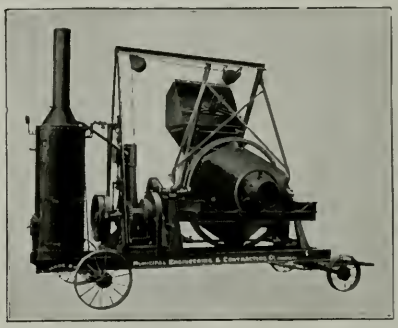

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ing costs which cuts the discrepancies between the various totals from the present general percentage of anywhere from 50 per cent to 100 per cent down to 5 per cent to 10 per cent, and

2. The contractors can no longer, having this information, be played against one another as is so often the case at present.

There are other advantages, too. For example, much money is now spent in useless competition—a dozen contractors are asked to bid, unknown to one another, when two or three tenders would be quite sufficient. In a job in New York city not long ago, a piece of work costing $41,000 was tendered for by some eighteen or twenty contractors and it was afterwards shown that the actual total cost to all these contractors, of merely preparing specifications and submitting tenders was about $43,000, or $2,000 more than the value of the job itself.

We submit the above rough outline of this scheme for the consideration of Canadian contractors. In these days of high cost of everything we cannot afford to let any reasonable looking remedy go by without trying it once. If it works well in other places, why not in Canadian towns and cities?

Building Revival

That a building revival is close at hand is indicated by optimistic letters to the publishers of this magazine, together with orders for advertising, the latter coming from many eastern firms which discontinued their Pacific Coast advertising during the period of the war. Here are the names of a few of the concerns that believe in advertising in The Architect and Engineer, and whose ads. appear for the first time in this month's issue:

The Glidden Company, Cleveland, Ohio, (paint and varnish dealers), 123 Hooper street, San Francisco.

Johns Manville Company, New York, (building materials), Second and Mission streets, San Francisco.

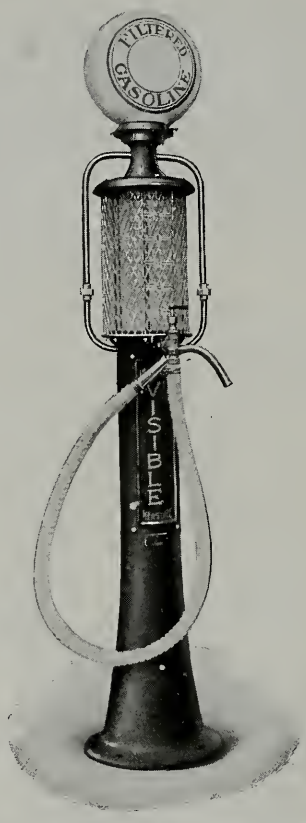
Garfield & Company, (Ransome mixers, Insley spouting plants, etc.), Hearst building, San Francisco.

Pacific Steel & Boiler Company, (heating plants, boilers, etc.), 322 Monadnock building, San Francisco.

Ralphs-Pugh Company, (fire extinguishers and equipment), 530 Howard street, San Francisco.

U. S. Metal Products Company, (metal window sash and doors, etc.), 555 Tenth street, San Francisco.

American Window Glass Company, Pittsburgh, Pennsylvania, represented in San Francisco by L. H. Butcher Company, 341 Montgomery street.



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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.
(Required by the Act of Congress, of August 24, 1912),

Of The Architect and Engineer of California, published monthly at San Francisco, California, for April 1, 1919.

State of California, } ss.
County of San Francisco, }

Before me, a Notary Public in and for the State and County aforesaid, personally appeared A. I. Whitney, who, having been duly sworn according to law, deposes and says that she is the sole owner of The Architect and Engineer of California, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

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Editor.....FREDERICK W. JONES
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Managing Editor .....None
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2. That the owner is A. I. WHITNEY, Sole Owner, 627 Foxcroft Bldg., San Francisco.

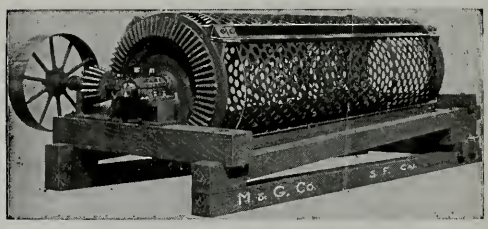
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

A. I. WHITNEY,
Publisher and Owner.

Sworn to and subscribed before me this 28th day of March, 1919.

[SEAL] SID. S. PALMER,
Notary Public in and for the City and County of San Francisco, State of California.
(My commission expires December 31, 1922.)



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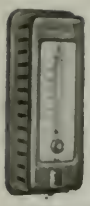

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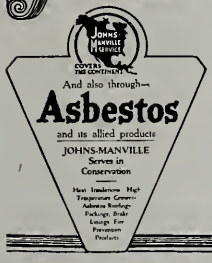

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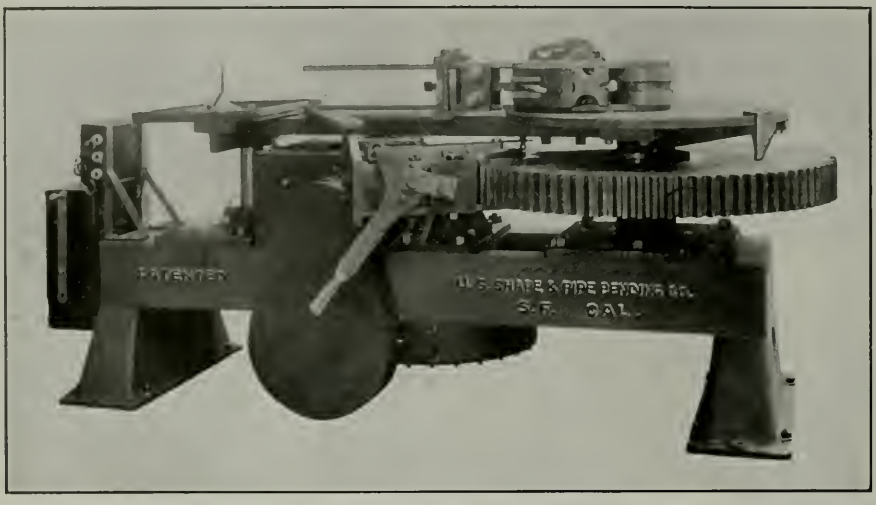

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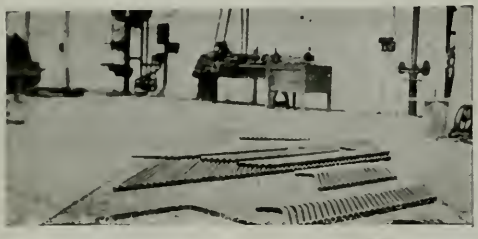

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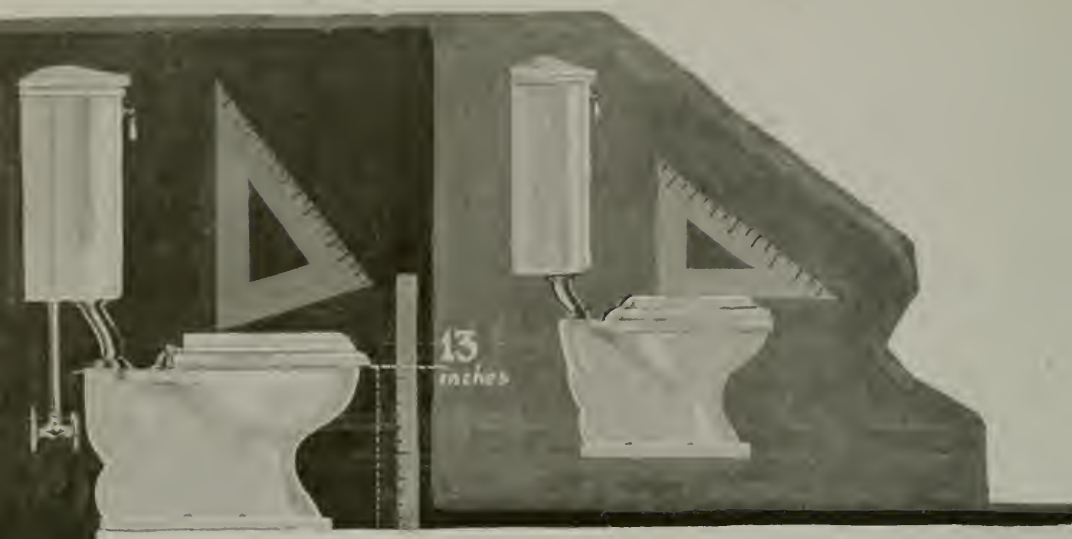

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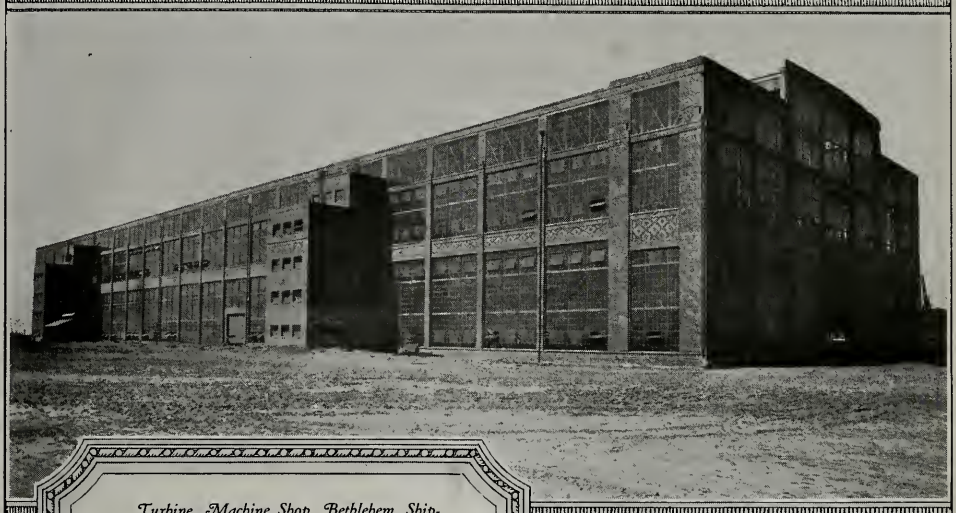

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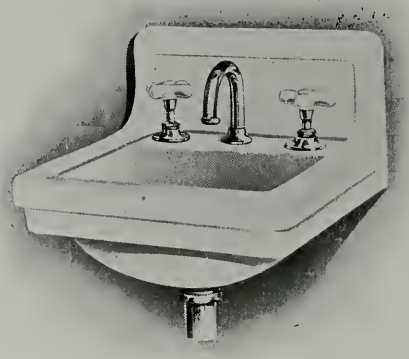

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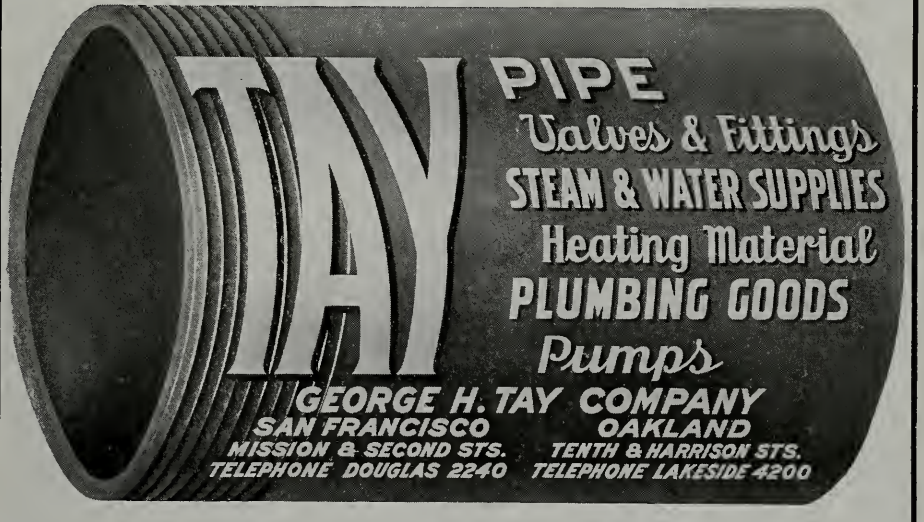

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CEMENT
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market street, San Francisco.
- Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
- Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- Paraffine Paint Co., 34 First St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT GUN
- Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
- Fink & Schindler, 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
- Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.
- H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr, of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
- Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
- Steel bars sold by W. S. Wetenhall Co., 725 Second St., San Francisco.

CONCRETE SURFACING
- "Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Herbert Beckwith, 412 Call-Post Bldg., San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.
- R. W. Littlefield, 565 Sixteenth St., Oakland.
- Houghton Construction Co., Flatiron Bldg., San Francisco.
- Bos & O'Brien, Hearst Bldg., San Francisco.
- Larsen, Sampson & Co., Crocker Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
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GENERAL CONTRACTORS (Continued)
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' MACHINERY
Harron, Rickard & McCone, Townsend St., San Francisco.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CORK TILING, FLOORING, ETC.
Be-ver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK
California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 530 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

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The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

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Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

FANS AND BLOWERS
John Ringius, 252 Townsend St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
General Fire Extinguisher Company, 453 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
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FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.
- W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GARAGE HARDWARE
- The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS
- Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

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- American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
- Fuller & Goepp, 34 Davis St., San Francisco.
- W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
- Dolan Wrecking & Construction Co., 1607 Market St., San Francisco
- J. O'Shea, 2100 17th St., San Francisco.

GRANITE
- California Granite Co., Gen. Contractors' Ass'n, San Francisco.
- Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
- California Building Material Co., new Call Bldg., San Francisco.
- Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
- Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
- Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
- The Stanley Works, New Britain, Conn.

HARDWOOD LUMBER—FLOORING, ETC.
- Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, First St., near Broadway, Oakland.
- Oak Flooring Manufacturers' Association, 1014 Ashland Block, Chicago.

HEATERS—AUTOMATIC
- Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

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- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Mangrum & Otter, 827-831 Mission St., San Francisco.
- James & Drucker, 450 Hayes St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
- William F. Wilson Co., 328 Mason St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
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HOSE—GARDEN, FIRE, ETC.
Ralph-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

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"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

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Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Trussed Kahn Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

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Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

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OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

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- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

PAINTING, TINTING, ETC.
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- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- Aspromet Company, Hobart Bldg., San Francisco.
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- The Glidden Company of California, 123 Hooper St., San Francisco.

PAINTS, OILS, ETC.—Continued
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
- U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 180 Jessie St., San Francisco.
- James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettish, 365 Fell street, San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
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P. H. Reardon, 57 First St., San Francisco.

PUMPS
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Patent Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
Apromet Company, Hobart Bldg., San Francisco

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Building Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francisco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

SKYLIGHTS
Apromet Company, Hobart Bldg., San Francisco

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

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Ocean Shore Iron Works, 558 Eighth St., San Francisco.
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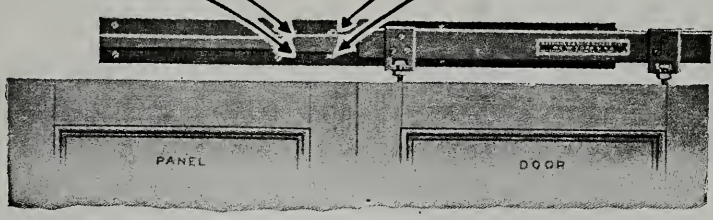

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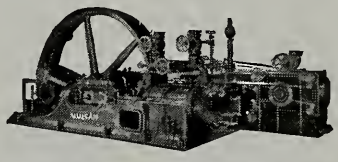

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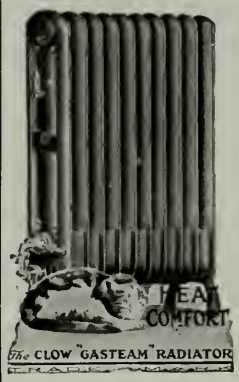

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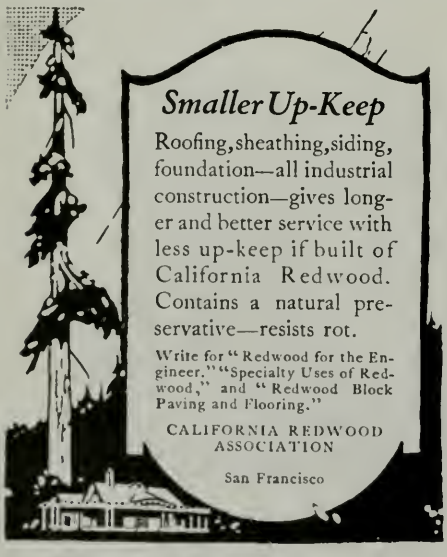

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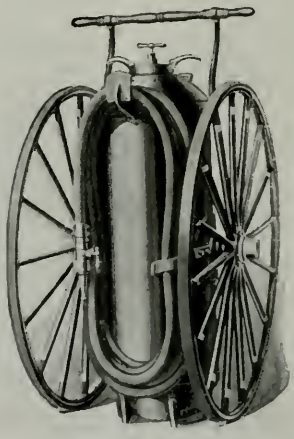

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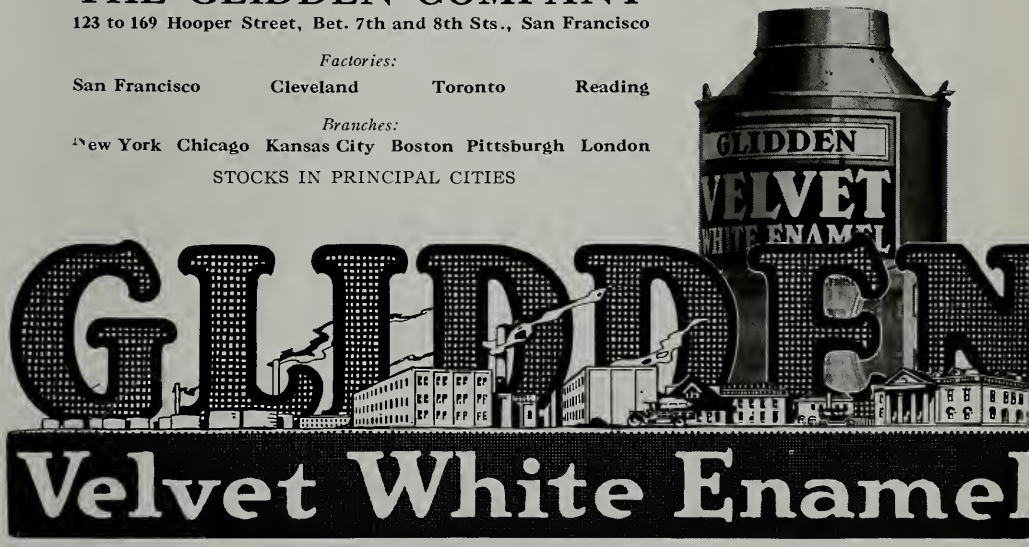

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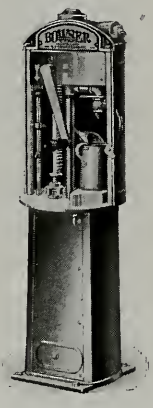
Fig. 245



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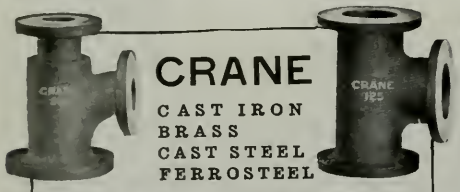

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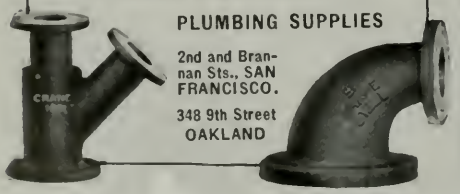

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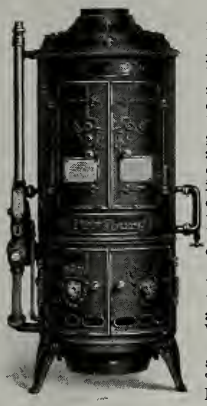

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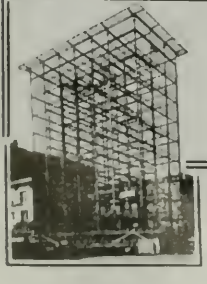

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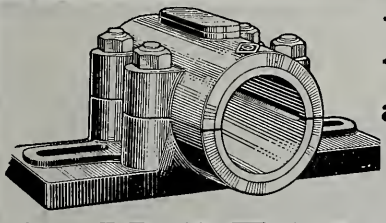

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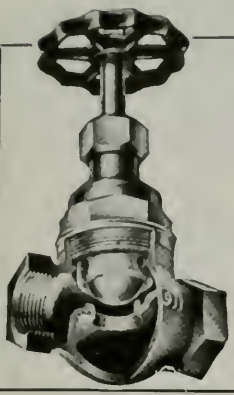

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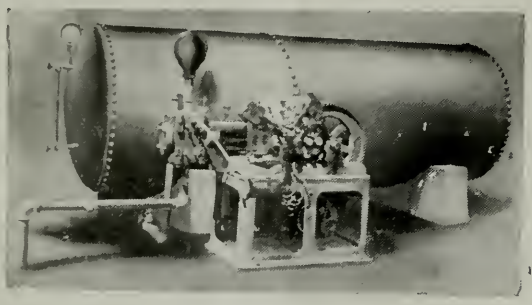

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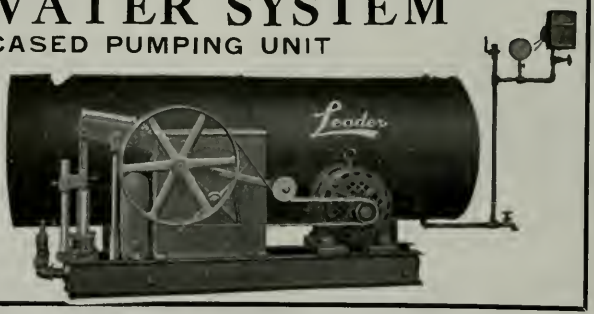

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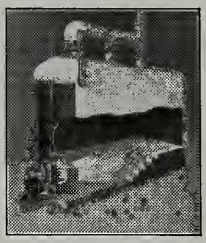
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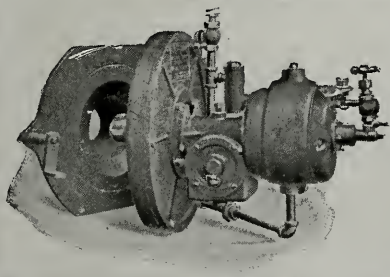

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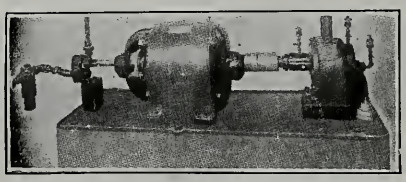

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The Architect and Engineer

Volume LVII. OF CALIFORNIA Number 3.

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GERTRUDE E. COMFORT, ARCHITECT

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

JUNE, 1919 Vol. LVII. No. 3

"Build Your Home Now!"

By HENRY H. GUTTERSON, Architect

FOLLOWING, as it does, the long period of building stagnation due to war conditions, the present revival of interest in building makes a special appeal to the home seeker. Among those whose home requirements have been upset by service-in-arms or hastened into being by reason of that service, there is a real enthusiasm based on a more and more acute need the whole world over. These home seekers, and they are legion, are looking longingly at the "labor problem," so-called, measured as it is in costs—wages and manufacturing costs—and hoping that the Government's present building campaign may yet evolve something of a practical nature to solve their problem. They desire to "build now," in other words, but apparently find conditions adverse and suggestive of delay, hesitation and doubt. Their hopes should be proven well founded, even at the cost of great and unique efforts on the part of the Government.

The genuine desires for a home, to say nothing of the equally genuine and general desires for activity among the millions dependent for a livelihood on the building trades and manufacturing of materials, are normal, inherent desires; instincts not to be put down lightly; and inseparable from this greatest of all present-day social problem, called the Labor problem. Perhaps no truer statement regarding the prevalent labor unrest has been made than that its solution lies along educational lines, in stimulating feelings of responsible citizenship among all classes. And how better can this be done than by making them the owners of their homes? "Bolshevism," so-called, or other forms of unrest based on the desire to overturn through violence, cannot thrive among those who own property, for with them destruction becomes suicidal.

A prominent New York architect has recently advocated "standardization" as a means to meet this demand for dwellings. But, although this would naturally tend toward reducing costs, it would overlook that all important distinction between a home and a house that in the end is of most vital importance if the solution of the problem is to be permanent. Recently King George of England,

HOUSE ON EXTREME RIGHT DESIGNED BY LOUIS C. MULLGARDT
TWO ON LEFT DESIGNED BY HENRY H. GUTTERSON

HOUSE FOR GARDEN HOMES COMPANY, SAN FRANCISCO
Henry H. Gutterson, Architect

himself a large landlord, in addressing the building authorities in London, said on this subject:

"'Homes' is what is required, not merely 'houses,' and it is exactly in the ratio in which the average citizen discerns the full value of the essential differ- government building schemes will bear fruit of real quality. Barrack 'model dwellings,' no doubt a step out of the chaos of the industrial period, are by no means the ideal 'home,' as any inmate can testify, and rows of houses in rows of streets in their way, are almost as undesirable as congested 'model dwellings.' Happily, those 'who know' are engaged, the world over, in educating public opinion and, based on truer conceptions of home, town planning in all its best phases is coming rapidly to be a necessity, recognized more and more as an obligatory requirement."

Home has happily been depicted as the center, though by no means the boundary, of human affections. The setting for that home is usually conceived of as a house, and the problem is to get that house to truly express the owner's best concept of home, to get it at the cost that he can afford, and get it when he needs it. With many that time is now! The cities are crowded, and dwellings are growing more and more scarce. What is the solution?

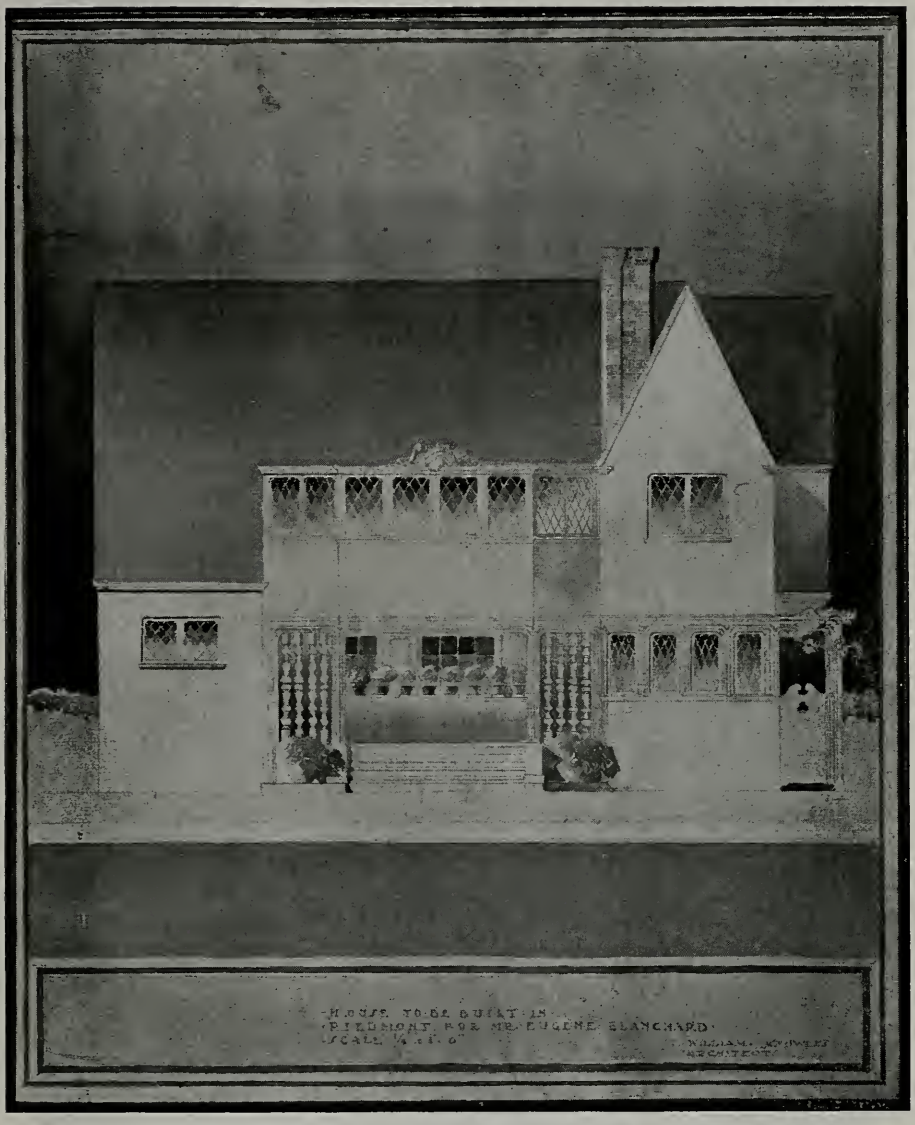
Locally, the tendency has been to meet the complexities of living by reducing the routine work, the rent, etc., by exchanging home for existence in a "down-town" hotel or apartment. But this, at best, is a makeshift, and even the lure of an automobile to carry one abroad, or of the "night life," which will soon be on the wane when divorced from liquor, will prove inadequate substitute for a real fireside. Also, the down-town apartment and hotel life in the large cities especially, is becoming abnormally expensive, and a revolt is doubtless in store for the operators of cramped community housing schemes to face.

The realty men are already hard pressed to fill the demands for detached dwellings, and architects and contractors are busy in planning and estimating new ones. But in far too many instances the item of cost is found to be too great and is taken as a real stumbling block, so that construction is postponed or abandoned. This is peculiarly unfortunate, as it will be far more difficult to again arouse that spontaneous enthusiasm that is prevalent today which is dulled by this anti-climax.

Examine the situation as to building costs, and it is readily seen that they can be grouped under the headings of labor and materials. Nearly everybody agrees that labor will not be cheaper for several years to come. Just now the tendency is decidedly upward, as may be noted by the recent announcement that after July first Union carpenters in San Francisco are to have $8.00 per day. And the carpenters usually lead off in any wage demands, so that we may expect it will soon become a general increase. So this item of labor, which is always a very large one in buildig operations, is admittedly on the increase.

Materials, on the other hand, are expected by the average man to drop in price. But how can they drop? What are building materials? The actual stuff from which they are made makes up but the smaller portion of their value. Bricks, glass, lumber, metal work, plumbing, hardware, etc., have certain material, native values; but it is the labor put into them that makes them useful, and that labor is not going to be cheaper! It was estimated at the last conference of Developers of High Class Residence Property, assembled in Birmingham, Alabama, that at least 85 per cent of the price of building materials could be classed as labor—labor of manufacture and transport—and that in the average house the cost directly attributable to materials was not in excess of $750.00! In other words, the man who desires or needs a home now is being snared by false appearances to

HOUSES, ST. FRANCIS WOOD, SAN FRANCISCO
Henry H. Gutterson, Architect



STUDY FOR OAKLAND HOME
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A HOUSE IN ST. FRANCIS WOOD, SAN FRANCISCO
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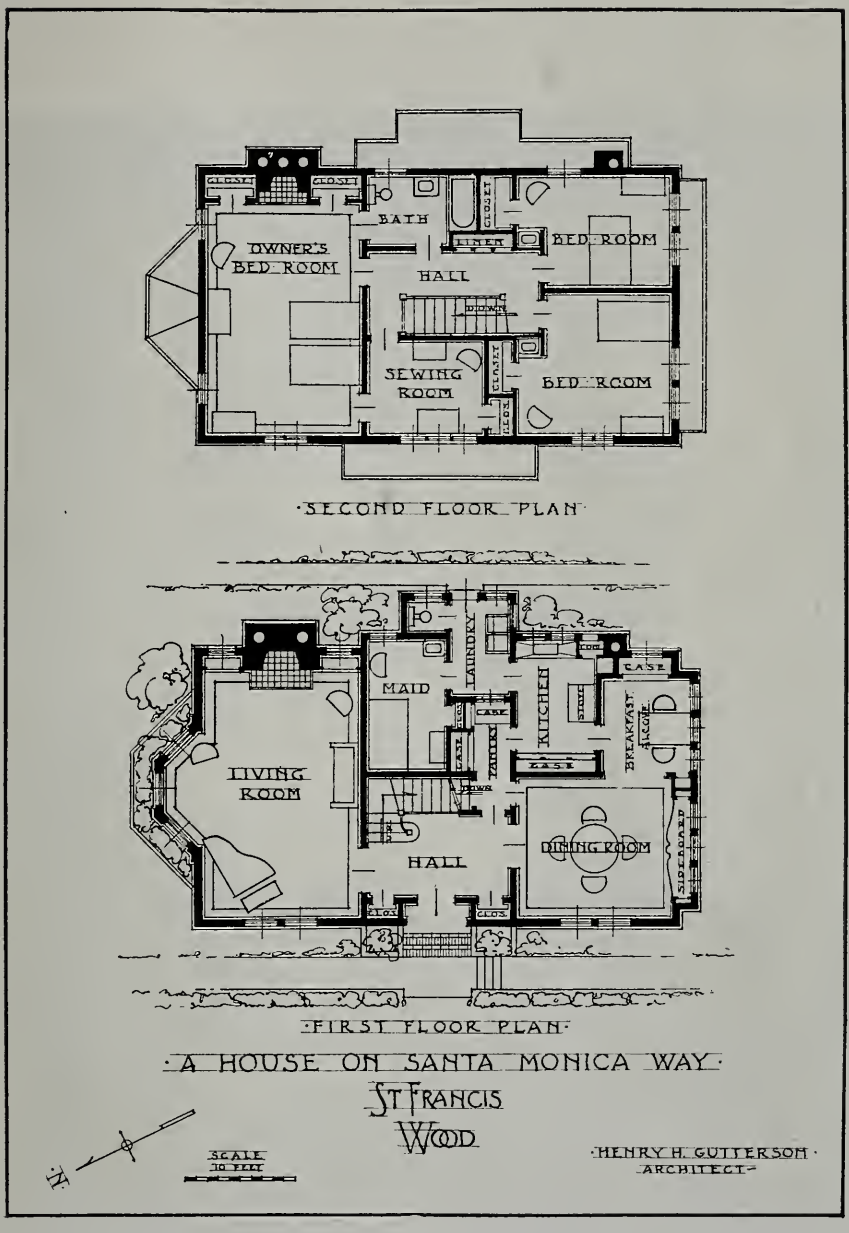

PLAN, A HOUSE IN ST. FRANCIS WOOD, SAN FRANCISCO
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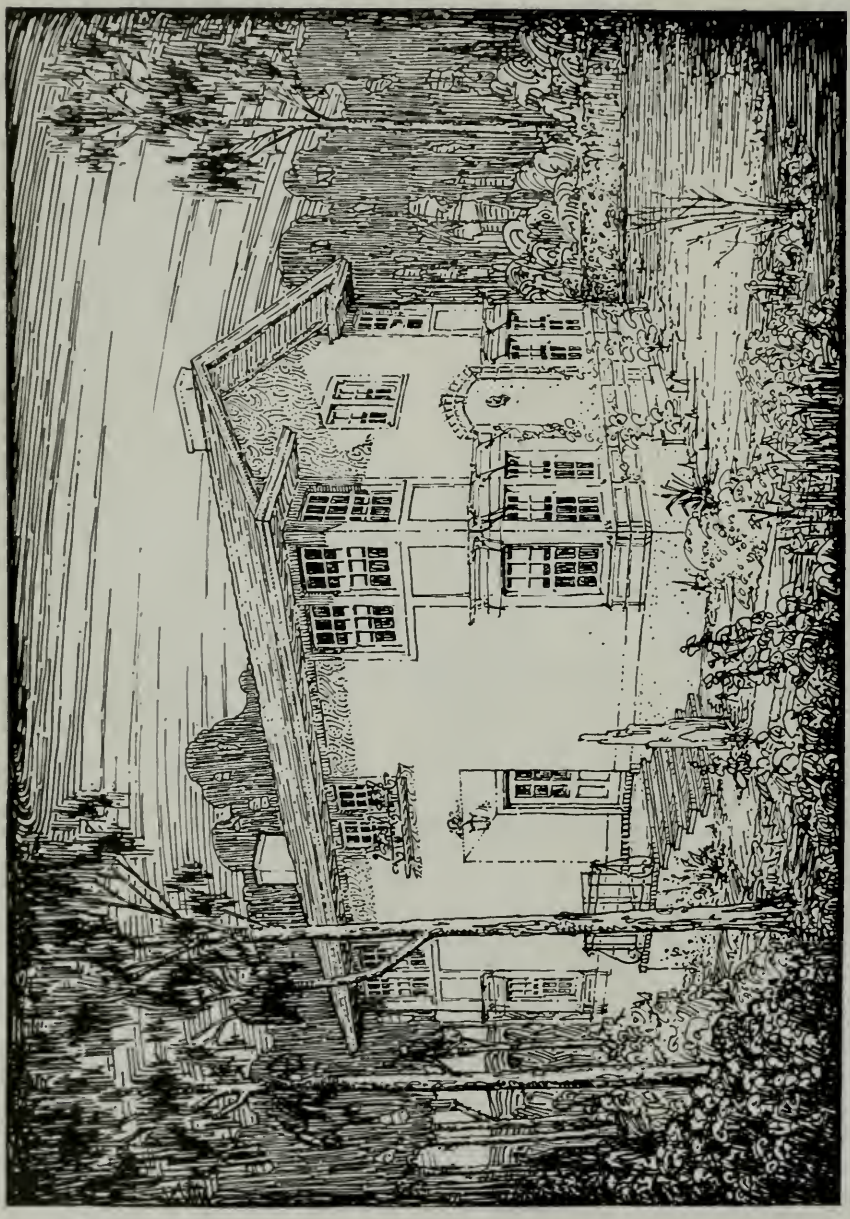

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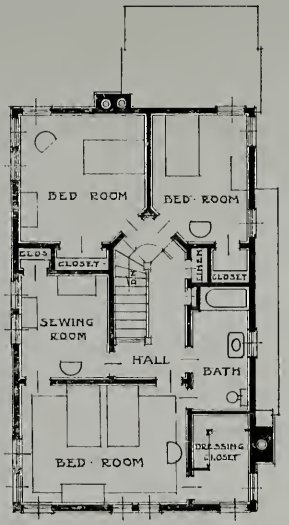
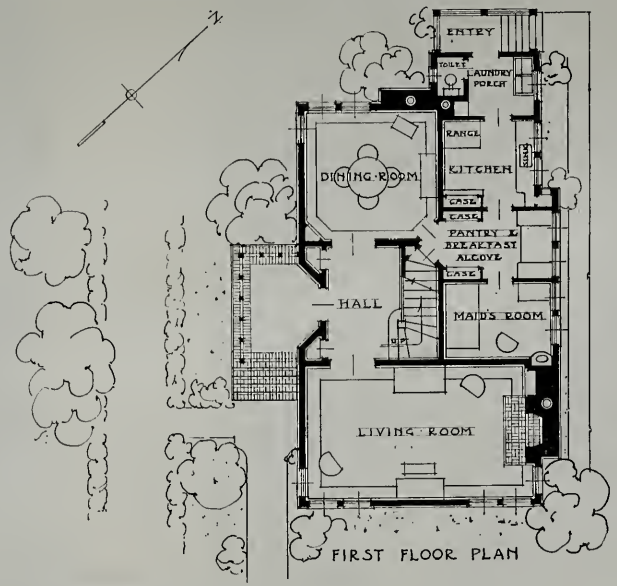


SECOND FLOOR PLAN



FIRST FLOOR PLAN

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SECOND BED ROOM	13'-3" X 13'-6"	ENTRANCE HALL	7'-3" X 11'-4"
THIRD BED ROOM	10'-0" X 14'-0"	DINING ROOM	13'-3" X 14'-0"
SEWING ROOM	9'-6" X 10'-3"	KITCHEN	9'-9" X 10'-0"

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Albert Farr, Architect

postpone it on account of the possible but not probable drop in price of items aggregating not over $750.00. He is allowing his young married life to slip away, his children to be handicapped or his enjoyment of home to be postponed till it is almost too late for the best returns, because of false reasoning, or a lack of reasoning! When this condition is multiplied, as it is, in all classes and in all communities, it becomes almost a menace, hand in hand as it is with social and industrial unrest among those very people who most need to have homes. It is but one of those subtle suggestions that would keep the world from again becoming normal. Hence the Government's educational campaign looking toward keeping this labor active, and hence the need for individual effort toward building.

The Government posters are bringing out many helpful facts, among which are these: that a man can borrow money on his equity in a home, whereas on rent he cannot; and it is a duty to country, family and self to own a home; and, to the workers, "One good turn deserves another; good work here will encourage others to build." It is also a fact that on income tax returns loans for home building are deductible, and interest payments thereon tax free. These and many other facts combine with the loosening money market to prove the necessity for adjusting ourselves to a higher scale of values, forgetting that world that the war has swept away for all time; recognizing the real value of all lines of work and the right of the worker to a home. The Government is making efforts toward any financial and industrial adjustments which may prove necessary toward these ends, and our support of these efforts must help bring results.

Finally, with our courage up and finances adjusted, how important it is to build in the best way we can afford. Good construction has always proven itself a worth while investment. When that investment involves the setting for the center of our affections it should allow for progress. Our house should be a substantial, adequate, artistic background for the expression of our development. How could it be better set than in a garden with free space and sunshine on all sides—a garden home. Build now!

* * *

Oakland Architects Busy

Messrs. Schirmer-Bugbee, architects in the Thayer building, Oakland, are very busy. They have plans for a $30,000 residence at Santa Rosa for Mr. A. E. Goff, an $8,000 house in Lakeside Highlands and a $20,000 apartment house on Lakeshore boulevard, for Mr. L. B. Hoge.

Mr. Hamilton Murdock, Realty Syndicate building, Oakland, has prepared plans for a two-story store and office building for the Realty Syndicate to be erected on 15th street, between Franklin and Broadway, at an estimated cost of $20,000; also a one-story brick office building for the same owners on 11th street, near Webster. Mr. Murdock has completed plans and let a contract for a two-story, seven-room residence in Alameda for Mrs. Helen Davis.

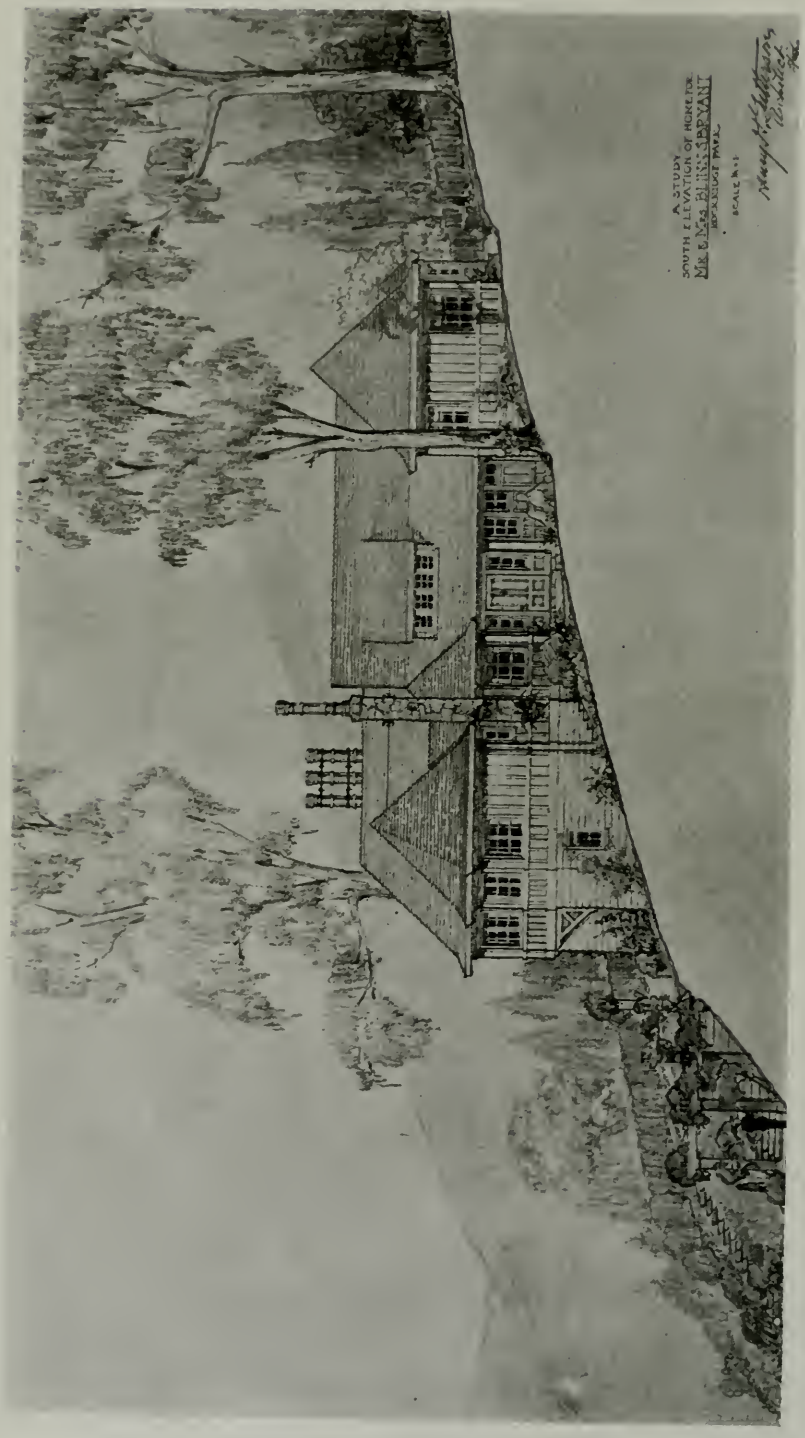
Mr. Clay N. Burrell, First Trust building, Oakland, is preparing plans for a five-story brick hotel to contain two hundred and fifty rooms and eleven stores; also a five-story Class "C" apartment house, 60x90, on 14th street, to cost $78,000; also a part one and part two-story commercial garage on Broadway, near Piedmont avenue, to cost $25,000; a reinforced concrete factory, 37x200, for A. L. Jaffe, at Powell and Vallejo streets, Oakland. Mr. Burrell also has made plans for an additional unit, including sheet plate works and administration building for the Hammer-Bray Company on East 12th street, Oakland.

The Charm of the Small House

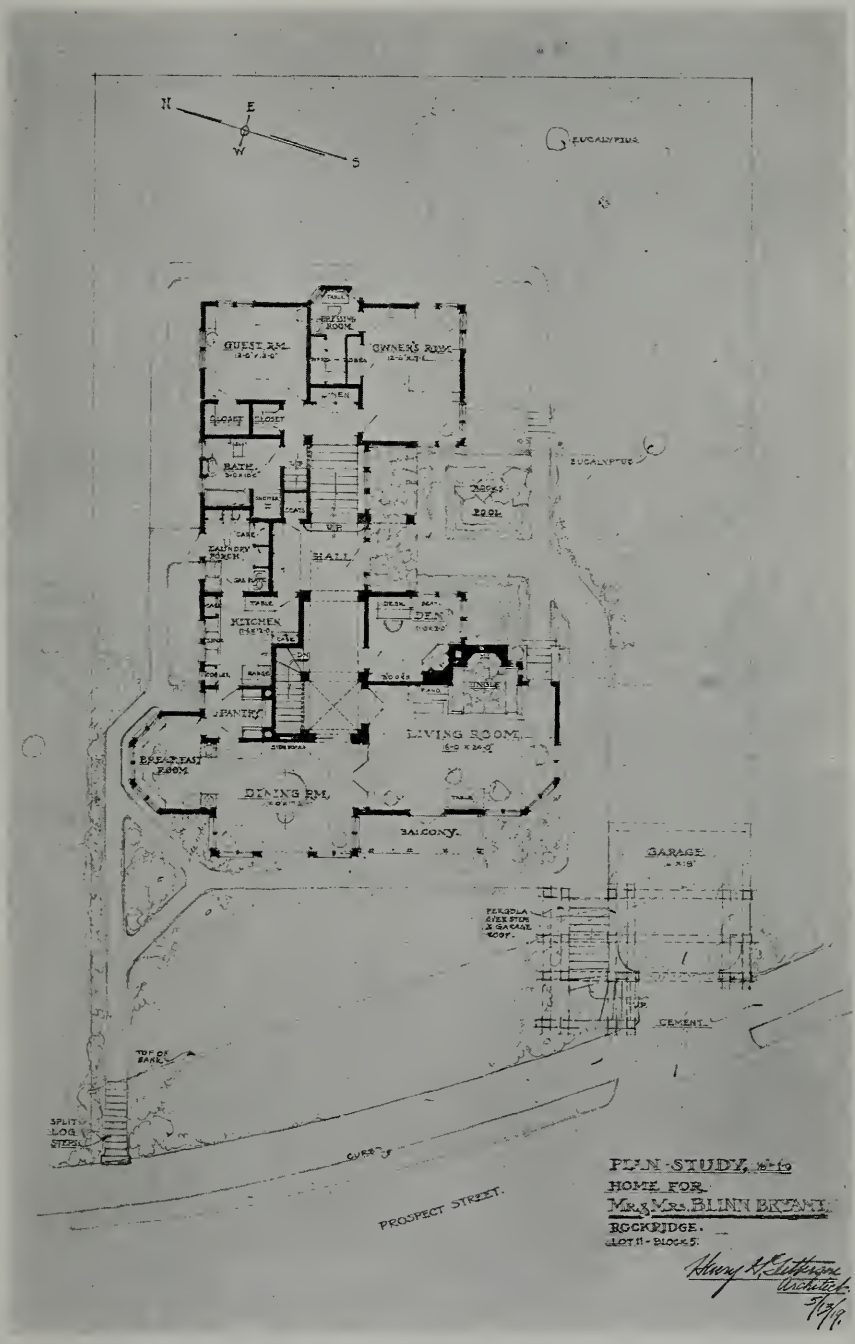
IT IS possible to consider the house as a box or a collection of boxes, in which human beings stow their bodies and their various activities during certain parts of the day and night. From a still more material point of view it may be considered as a combination of floors, walls and roof, designed to shut out the weather; or as a more or less scientific structure of certain materials assembled in such fashion as to defeat the force of gravitation. To many people a house is simply a place in which to sleep and eat one or more meals daily; while to others it is a device for making money.

If a house be no more than one or all of these things to a man, he is one to be most deeply pitied; he has missed many of the purest joys of life. For the real house is not its floors and walls and roof; its doors, windows and chimneys; its stone and brick and plaster and wood; its plan and its decoration. The real house is something of which these are but the outward, visible dress, the appanage and incidentals; the real house is the invisible soul, if we may so call it, contained in the material shell of its visible form. Like all immaterial verities underlying material things, it may take on a protean variety of aspects; it may be a shrine, a temple, a castle, a bond, a present dream in absence; it may be an exclusive abode, shutting out the external world and all disturbing and confusing things; or again it may be widely inclusive, holding out, as it were, hospitable arms to gather into its embrace its many children, to welcome all the adepts of its special affections and possessors of the password of its particular friendship.

All this—the reality of the visible house—is quite independent of the size, cost, location, material and form of the structure which encloses it. It is something greater and broader even than the idea of home, which of all familiar conceptions comes nearest to the wealth of meaning of the house and constitutes its richest and most precious element; but the house includes the home and enshrines it. Doubtless the home-idea is the inner and animating core of the house-idea; but not the whole of it. For one can conceive of the house that does not contain a home; but hardly of a home that is not enclosed in a house. Even the seaman's "home on the rolling deep" is bounded by the steel or wooden (or concrete) walls and decks of his ship, which constitute his house for the time being as well as his home. But the true idea of home gains full significance and realization only with the permanence of settled habitation in a house. It is the impermanence, the constant shifting and change of habitation inseparable from apartment-house existence in large cities, that makes the home-idea so weak in the flat. The flat-dweller does not speak of his "house" or his "home," unless it be in very exceptional cases, for to him the "flat" is neither. Its very name suggests only two dimensions in horizontal extension—and those two usually minuscule dimensions! The suppression of verticality in the housekeeping by the elimination of stairs is the chief, and almost the only, merit of this form of domicile, hence the appropriateness of the name of "flat"; how suggestive, too, of its squeezing out from the flat-dweller's life of a large part of the variety and spice of life in one's own house! And how often we hear of the mental and moral revolt that comes in later life against the poverty and flatness of this existence, even when passed in those tenements which, calling themselves "first-class apartments," exact twice or thrice the rental of a first-class house, and under the guise of house service, rendered as an equivalent for exorbitant



ELEVATION, HOUSE FOR MR. BLINN S. BRYANT
HENRY H. GUTTERSON, ARCHITECT



PLAN, HOUSE FOR MR. BLINN S. BRYANT
HENRY H. GUTTERSON, ARCHITECT

DETAIL OF GARDEN, HOUSE OF MR. F. W. BRADLEY
CHARLES PETER WEEKS, ARCHITECT
MacRORIE & McLAREN, LANDSCAPE GARDENERS

HOUSE OF MR. F. W. BRADLEY, SAN FRANCISCO
Charles Peter Weeks, Architect

GARDEN VIEW, HOUSE OF MR. F. W. BRADLEY
Charles Peter Weeks, Architect

HOUSE OF MR. F. W. BRADLEY, SAN FRANCISCO
Charles Peter Weeks, Architect

STAIR HALL, HOUSE OF MR. F. W. BRADLEY
Charles Peter Weeks, Architect

LIVING ROOM, HOUSE OF MR. F. W. BRADLEY
Charles Peter Weeks, Architect

DINING ROOM, HOUSE OF MR. F. W. BRADLEY
Charles Peter Weeks, Architect

PERSPECTIVE, RESIDENCE FOR MR. JOSEPH J. TYNAN
Louis M. Upton, Architect

RESIDENCE OF MR. JOSEPH J. TYNAN, SAN FRANCISCO
Louis M. Upton, Architect

rentals, subject their inmates to the inescapable tyranny of janitors and uniformed flunkies, with hands incessantly held out for tips!

Is it not curious, by the way, to note that—in New York at least—the poor and middle-class (or shall we say "middle-wealth"?) families are driven from houses into flats by economic pressure, and the very wealthy by social pressure combined with the mercantile invasion of residence districts? Wearying of the burden of social exactions and of the administrative care of great houses, the wealthy house-dweller sells the house and moves into a $20,000 Park Avenue apartment. The bank clerk or college professor gives up his house and occupies a flat, because he cannot afford longer to "run" even the most modest house, which, in the city, requires several servants to do what can be accomplished in a flat with one; or, as an alternative, a constant and wearing running up and down of many stairs. But in time both the millionaire and the hard-working wage-earner feel the loss of those rich elements of home-life which can be cultivated only in the house. The rich man takes refuge from the city flat-life by occupying for the summer or for half the year his villa or summer "cottage"-palace at Lenox or on Long Island or on the Maine coast; he must salt the flatness of existence in the city with the savor of a few weeks or months of independence in his own house. The wage-earner who has no such refuge in his possession, and inadequate leisure to enjoy one if he had it, dreams of a happy day to come when he can retire from the dull routine of the office and flat, and in a modest cottage in New Jersey or in Westchester County, or perhaps in the New England or Middle West village from which he came, can cultivate his own little garden, swing his hammock on his own piazza, smoke his pipe by his own open fire, and gather about him under his own roof from time to time his scattered family and his special cronies and friends. It is a beautiful dream, not always realized; sometimes realized in part, sometimes in its full delightsomeness. But while it is dreamed, what an inspiration and stimulus it supplies to earnest labor! What a goal it sets before the laborer, to give value and significance to every hour of toil! What a reward it offers for present frugality and careful saving!

The great house has its fascinations; space, elegance, beautiful vistas, the elaboration of every refinement of luxurious comfort. In it the wealthy can surround themselves with the chosen environment, with pictures and bric-a-brac, rare carved furniture from ancient European palaces, trophies of sport, books in costly bindings, and create their own landscape about them by the skill of the landscape artist and the expenditure of great sums of money. They can shut out from sight every unpleasant or vulgar object, and forget the toiling, dirty-handed, working world outside, from whose honest labor so much of their luxury is drawn, and cultivate without disturbance whatever field of culture most attracts them.

But the great house has its price. One cannot live in luxury without a retinue of servants; and in a certain sense one is always the slave of those who serve him. A great house is a great care as well as a source of huge expense; how often are men driven to bankruptcy by the ever-increasing budget of their great establishments? The great house means large and costly entertainments and a large and widely inclusive hospitality; a hospitality often conventional, based on a rigid debit and credit account of invitations given, received and returned. It is the splendid antithesis of the "simple life," the acme of polished, systematized and artificial existence; a huge investment, with, too often, a miserably small

WATER COLOR OF A HOUSE IN SANTA BARBARA
Painted by Mr. Charles Peter Weeks

return of unalloyed and rational pleasure. There are those, of course, for whom the great house is the splendid temple of the rites of a beautiful, holy, rational family life, of a simple, hearty, restful hospitality; the merited reward of a life of earnest work, whose benefits have been shared with those who helped create them, or have been bestowed freely on the less fortunate, or have been made otherwise helpful to humanity, but how few are these honored exceptions!

The little house need entail none of these anxieties and burdens. It may be made just large enough for one's modest means, and yet compass within these modest limits all the most sacred joys of life. There is no confining the expansion of the spirit within the cubic contents of any room, however large or small. One may commune with the choicest minds of the ages in a seven-by-ten room—Dr. Eliot says that a five-foot shelf may suffice for this purpose. The most wholesome and lovely family life may flourish for years in six or seven rooms. The fairest flowers of friendship may be cultivated in a cottage, and a beautiful hospitality be dispensed in the commuter's house on a 25-foot lot in the suburbs. The man and wife who cultivate a tiny garden-plot of flowers in front of their house, and raise peas and corn in the lot behind, may extract from their modest eighth of an acre a keener joy and a richer satisfaction than the plutocrat from his Italian garden, his hothouses, prize orchids and army of gardeners. Truly, happiness is something poured in from without; dependent not on the multitude and costliness of one's possessions, but on the spirit and its attitude towards life. The little house may enshrine it as well as the palace.

To the artist, as an artist and not as a man earning his bread and butter by commissions on plans and superintendence, the little house

offers problems as fascinating, and often as difficult, as any millionaire's palace.

It is true that one may draw plans and write specifications for a small house in short order and with but little thought. To put together six or seven rooms with the necessary hall, stairs and chimney-flues, so as to produce a habitable building, is within the powers of a tyro. But the little house with charm—that is another matter! The line that divides the artistic from the commonplace may be a tenuous line sometimes, but it is as real as the Arctic circle or the Equator, and there are many who have never been able to cross it. No formula will suffice to bridge the invisible gap between them. The imparting of charm cannot be taught in the class-room. The designer must have within him the instinct of the beautiful, a certain spark of inspiration which it is not extravagance to call divine. He must not merely possess a cultivated taste, that is, the quality of culture which enables him to discriminate instantly between the commonplace and the fine, the beautiful and the showy, the simple and the vulgar; he must be a creator, an originator of beauty, a distiller of the subtle aroma of charm from the alembic through which have passed all his impressions, learnings, acquisitions, dreams, contacts of and with the things of house-design. For some, this process of distillation is deliberate, even slow. They do not produce magically successful "first thoughts," but every house that issues from their plans has in it something unique, personal, delightful; it has charm. Others dream lovely dreams in waking hours and produce with happy audacity the material embodiments of these dreams. But whether deliberately or by seemingly instantaneous origination, the creator of charm in the small house is externalizing what already exists within him; there must be involution before evolution. This mysterious generation of inward visions of The House—visions which take protean shapes in practice, and of which the architect is seldom conscious until he puts pencil to paper—takes us into a field of psychology and of the philosophy of esthetics in which I am not prepared to delve. Probably the most successful creator of charm in small houses would fail utterly to explain the process. He could not enumerate the elements of the artistic charm of his designs. That explains the futility of rules and formulæ for the production of charm.

Try it yourself. Pick out a dozen or a hundred photographs of small houses which appeal to you as charming—exteriors, interiors, details—houses from the country lanes of England, from French farmsteadings and villages, from New England by-ways; houses of stone, brick, half-timber, wood, stucco, tile and concrete; mingle with them the half-dozen houses of your own design, and then tell us what is the secret bond that unites them all in one family, the elusive common element that underlies all their diversified appeal. Their beauty is as varied as their materials, sizes and shapes. Some are merely picturesque; some are quaint; some you can call distinctly beautiful. Some are delightful to look at from without, nestling comfortably and harmoniously in their surroundings; others you feel you would like to live in. Walls of red brick and gray stucco and mottled stone, with shingles of slate and thatch and tile; high rooms and low rooms, beamed ceilings and ceilings of plaster; diamond panes and large panes; big fireplaces and little ones; houses with porches, with piazzas, with balconies, with bay-windows, and houses with none of these things—how long the catalogue of the elements of their design and how subtle and evasive the laws by which these varied elements have been combined in each appealing whole! At best, one can name certain

common qualities, but not any rule for producing them. Simplicity, harmony, fitness and sincerity are the cornerstone qualities, it seems to me, of their charm. Complexity and all appearance of labored picturesqueness must be absent from the small house. Its arrangements should reveal thought, but not painful thought.

The house of real charm appears natural, almost inevitable; it seems to say, "Of course!" This quality of inevitableness, of naturalness, of obvious fitness to its place and its purpose may be, indeed, the result of much study and experiment, at any rate, of long experience; but the labored process of its production should never be in evidence. It is an old saying that "the highest art is to conceal art." To make this saying true one should interpret it to mean that the highest art is that which conceals the labor that brought it forth. The most finished style is that which seems most natural and spontaneous. Yet though one laughs at the art teacher who enjoined his pupils to "try hard to be spontaneous," one must not forget that "involution precedes evolution," and that spontaneity of expression requires first of all abundance of material, the possession of something to say worth the saying; and that a long process of acquisition, often laborious and of digestion and discrimination, must precede the expression of what has been acquired.

The small house with charm has individuality. It may belong to a type with numerous exemplars, but it differs in subtle ways from all its congeners. As one rambles through the fishing towns and coastal farm villages of Maine, one encounters frequent examples of a type of house, one story high, low-set, shingled, with a central door and two windows on either side—the simplest possible solution of the rural house problem—yet beautiful with a rustic simplicity, a harmony of line and proportion that charms one by an insidious and evasive appeal. No two of these are exactly alike—that is part of the secret. Each has been an individual and personal expression, conforming to a perfectly common and familiar type, but having proportions, details of moldings, of door-paneling and window-trim, variations of roof-pitch and window-spacing, that impart to the whole its own individual and special character. It is like the difference between hand-made and machine-made furniture. The common type is pleasing, because it is a product of the country and its conditions. How different from the upstart, mechanical, prosperously ugly houses of the rural semi-rich of the same villages, which reproduce designs from plan-books published in Chicago or New York or Omaha or elsewhere?

The upshot of these considerations that I have somewhat ramblingly set forth seems to me to be this: The problem of the small house is well worth the architect's while. It even deserves a large measure of self-sacrifice on his part. To a busy architect, with many large commissions on hand, the small house makes little appeal; some offices refuse to touch it. This has always seemed to me a mistake, as if a great doctor should refuse to see a poor patient or a great divine decline to minister to a poor parishioner. Perhaps the policy is, after all, one of kindness to the smaller offices; but the kindness would be greater if the big offices shared their large commissions with the smaller offices, and did some of the little-house work themselves!

For, after all, there are a thousand small houses built for every large house, and the beauty and charm of the country at large depend far more on the character of the small houses than of the large ones. We have too many towns of palaces and slums, and too many semi-rural communities growing up with "handsome" streets of costly houses varying from sordid

ugliness to pretentious ugliness. A small house of charm is an object lesson to all who pass by. Doubtless the average small house of today is a better house than that of forty or even twenty years ago. It is better planned, better built, more convenient and livable; and even commercial syndicates have begun to cater to an improved taste in houses. But there is yet a great work to be done in this field, and our achitects are the men and women who must do this work, a work both of creation and education. We need to fight the American love of display, the national passion for big things which neglects or despises the little things. We must do what we can to eradicate the popular notion that Art (spelt with a capital A) means something costly for the few, something showy to be bought and applied from the outside, instead of something inherent, an essential part of our living and thinking and doing, a quality as necessary and natural in little things as in big things; something of the fireside and home, not the "daubing with cost" of which Bacon complained in the days of Queen Bess. The cheapest small house may, after all, be a true work of art, the product of an architect's unselfish and consecrated talent, full of the charm of simplicity, fitness, harmony and sincerity, a dwelling-place worthy of beautiful lives and high and homely virtues.—Architectural Record.

* * *

Prices of Hardwoods Likely to Advance

THERE is less concern over high prices than over the stability of prices. The general opinion is that a new price level has been established by economic conditions attending the world war. Everyone has been waiting for prices of hardwoods to drop, but they have not dropped. Instead we find advances in a number of items. Flooring has gone up—so have panels.

The building boom which was predicted six months ago is now blossoming forth. The construction of buildings and manufacture of peace-time commodities are now in full swing, and there is every evidence that the stabilizing of business is an accomplished fact. This stability of business carries with it the stability of prices, and therefore there should be no hesitation about stepping in and sailing along with the full current of business which is now flowing in an ever-increasing volume.

Export buyers are at the present time very active in the markets of the United States and Canada. When it is taken into consideration that Russia, which before the war supplied over 45% of the lumber used in the principal markets of Europe, is now entirely out of this business and will not be a factor for several years to come, it can be readily seen that the burden placed upon this country in supplying the European markets is a serious one. Russia's annual export of lumber before the war was approximately 7,000,000,000 feet. This, in addition to the very large quantity this country formerly shipped to Europe, must be made up on this side of the water.

This enormously increased foreign demand is already being felt, and it has tended to make various items of hardwoods scarce and undoubtedly it will bring about a decided advance in prices.

ENTRANCE DOORWAY, RESIDENCE OF MAJOR J. H. H. PESHINE, SANTA BARBARA
MYRON HUNT, ARCHITECT

The House of Major Peshine at Santa Barbara, Myron Hunt, Architect

By ARTHUR BROWN, JR., A. I. A.

THE first impression of Major Peshine's house is one of a certain indefinable classic quality. It has a sumptuous character, though this is gained by the simplest means. Throughout there is a sureness of touch in mass and detail that shows the masterly hand. A study of the plan will, no doubt, lead many a practicing architect to exclaim, "What luck to have a client who would allow one to make such a plan!" and he will also admire the talent that could make such splendid use of the opportunity.

The house is sympathetically disposed in relation to the topography of the site, its long lines following the direction of the contour lines, and the long mass pushed close up to the neighboring hillside, which thus protects the inner court, and at the same time, forms a contrasting background to the brilliant plaster walls and tile roofs of the buildings.

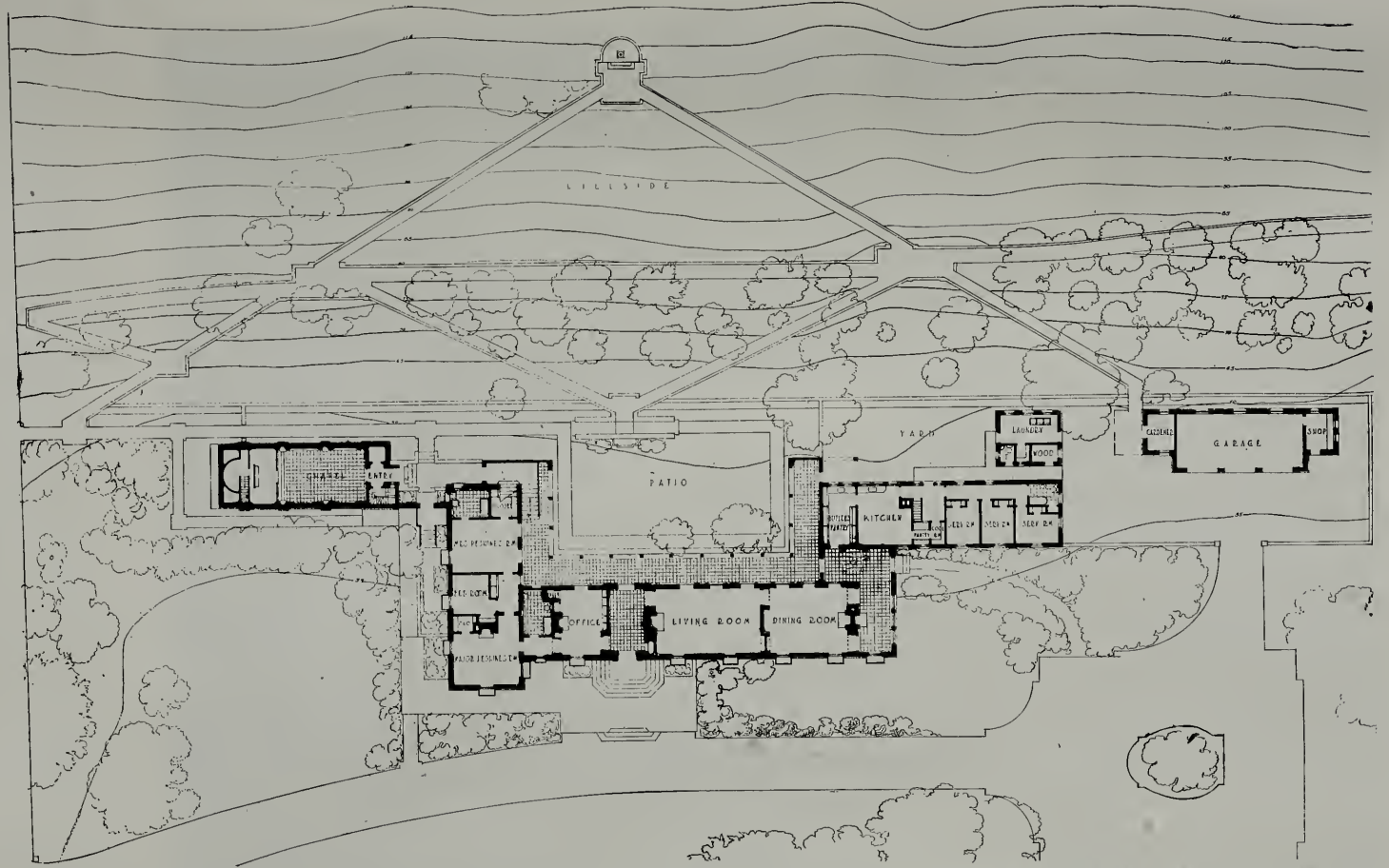
The main portion of the house is built about a cloistered patio; on three sides are walls and on the fourth side the steep wooded hillside.

The principal living rooms are disposed in a one-story wing facing towards the view and opening on the opposite side on the shady patio. This wing is capped by a low two-story wing containing the sleeping apartments, with its axis at right angles to the axis of the main wing, thus giving contrast and a pleasing opposition of masses. The group, composed of these two wings, forms the main body of the building. The main mass is flanked by two wings on secondary planes, perhaps 40 or 50 feet back of the main facade These wings contain the chapel on one hand and the service group on the other. The composition thus has balance, though far from being symmetrical. The detail shows a disdain for the trivial and a sense of fitness and proportion that only come with knowledge. The fenestration of the main facade is carefully spotted, with fine ample openings, and the belt courses give a just dominance to the lower floor, which is, in fact, the principal story. How many architects would have dragged in a decorative stairway leading nowhere! Mr. Hunt has not fallen into such a trap. The stairway to the upper rooms is rightly subordinated.

The decorative use of wrought iron is characteristic of this house, and the web-like black lines of the iron and the broad white surfaces of the stucco give mutual value one to the other. The chapel is pleasing in its general mass, but I should have liked to see a more Jesuit lavishness in certain details. Time will envelop the group in mellowing vegetation, and the charm of the house will grow with the years. The old olive trees, which are abundantly dotted around, form a beautiful nucleus for future planting.

The interiors are simple and well proportioned, in keeping with the Latin flavor of the ensemble. The site and climate have been sensitively understood, and the architecture moulded into a harmony both of mass and of detail.

RESIDENCE OF MAJOR J. H. PESHINE, SANTA BARBARA
MYRON HUNT,
ARCHITECT



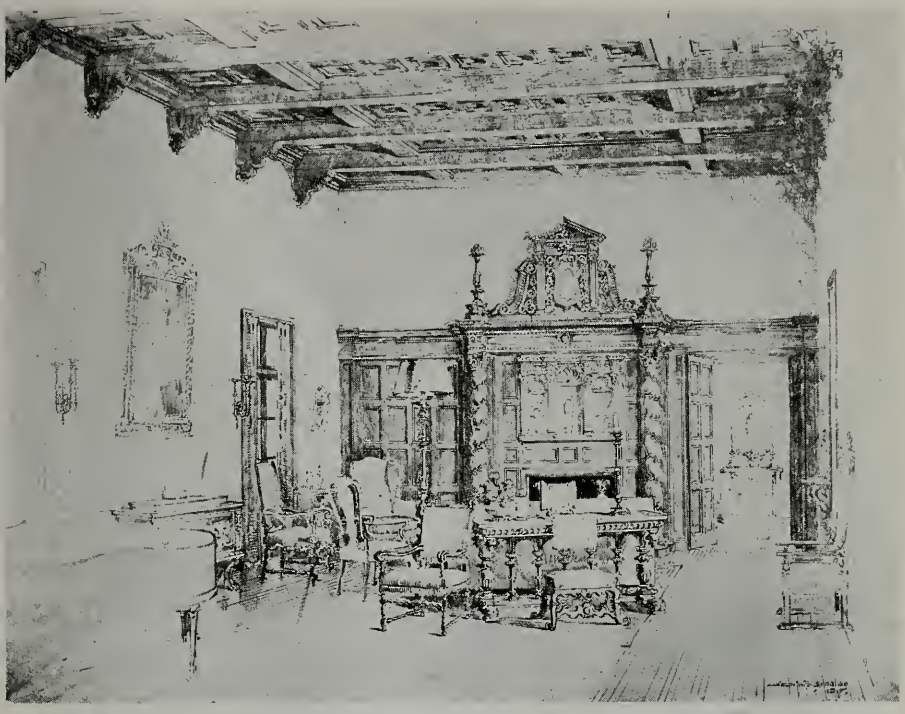
PLAN OF GROUNDS AND RESIDENCE OF MAJOR J. H. H. PESHINE, SANTA BARBARA
MYRON HUNT, ARCHITECT

CHAPEL, RESIDENCE OF MAJOR J. H. H. PESHINE, SANTA BARBARA
MYRON HUNT, ARCHITECT

SECOND STORY WING OF MAIN HOUSE AND PART OF CHAPEL, RESIDENCE OF MAJOR J. H. H. PESHINE
MYRON HUNT, ARCHITECT

MAIN STAIRWAY TO SECOND STORY, RESIDENCE OF MAJOR J. H. H. PESHINE, SANTA BARBARA
Myron Hunt, Architect

PATIO, SHOWING ANCIENT OLIVE TREES ABOUT WHICH THE HOUSE HAS BEEN BUILT. RESIDENCE OF MAJOR J. H. H. PESHINE, SANTA BARBARA
Myron Hunt, Architect



SKETCH OF LIVING ROOM, RESIDENCE MAJOR J. H. H. PESHINE, SANTA BARBARA
Myron Hunt, Architect

RESIDENCE OF MR. H. A. CONNER, PORTLAND, ORE.
Lawrence & Holford, Architects

ENTRANCE GARDEN APARTMENTS, NEAR PASADENA
IRVING J. GILL, ARCHITECT

Garden Apartment-Houses of the West*

THERE are certain fabulous things, like "cloud flowers," "castles in the air" and fantastic sayings, such as "squaring the circle" and "weaving a rope of sand," that are referred to when one wishes to speak of an impossibility, an altogether incredible thing. Garden apartment houses might be classed by some people among the fabulous things, were it not for the fact that some already exist amid the flower fields of California. In great cities, apartment houses are sometimes built about a simple court, planted to the toughest evergreen trees, and these are certainly pleasanter places in which to live than one of the great structures without open courts and with no attempts at a garden. But the apartment house encircled by a garden, and in turn surrounding a garden (which we are here presenting) embodies some of the most profound architectural truths of this age.

These apartments, built in the foothills of the Sierra Madre mountains, just back of Pasadena, California, are as simple as human art can construct them. The architect, Mr. Irving J. Gill, has proven to this generation that the primitive symbols of greatness, grandeur and stability, are as beautiful today as they were ages ago. He feels that there should be a return to the three great principles of the circle, the straight line and the square. The circle is the symbol of progression; the square the strength, and the straight line of infinity.

Man has become so confused by the whirl of life that his sense of the beautiful and of proportion has become dulled. He, in fact, likes confusion; he wants his house and grounds filled to overflowing with a multitude of needless things. The only way to teach him the error of his ways is to swing the pendulum far to the other extreme. Mr. Gill has done this service for architects, for he builds his houses absolutely without the customary restless ornamentation. It has taken courage to defy accepted taste; but, though a few people at first gaze in horror at the stark simplicity of his houses, after passing them for a few times they come to like them and find that they make all other houses look cheap and insignificant by comparison. They have the bold dignity of one of nature's creations, being absolutely free from all decorations save those woven across them by this master artist.

Although these apartment houses are so severely simple, for some reason they fairly breathe romance. Each little apartment shoulders its neighbor and, circling together, they enclose a large garden, the central feature of which is a pergola covered with flowering

* Some years ago Mr. Gill's unique apartments were illustrated in this magazine. At that time the buildings were new and the gardens had just been planted. The then bare walls are now literally covered with vines while the gardens are a mass of wonderful foliage and radiant blooms. The pictures and story are published by courtesy of Touchstone, formerly The Craftsman.

vines. The apartments are built of concrete; are fireproof; the doors and windows are set in metal frames and there are no casings or caps or projections of any kind inside the rooms that can show a crack or crevice in which dirt or dust could lodge. Baseboards and walls are of concrete and are curved together with the concrete floor. There are no square joints in the house. The bath tubs and sinks are sunk in magnesite and form one continuous piece with the walls and floor, thus preventing an accumulation of dirt and grease. The fireplaces are indented and raised slightly from the floor.

All sense of coldness which might arise from so severely simple a treatment is obviated by the peculiar treatment of the walls and the dull pinkish-red given the concrete floors. The floors are treated with an oil stain and waxed. The walls are tinted a soft gray and given a surface finish (a secret of Mr. Gill's) which causes them to reflect the colors of the furnishings of each room and to echo the tenderest glory of the sky and the brilliant colors of the garden. The rooms, therefore, glow with color that cannot be compared to anything save that of an opal. Changing constantly with the mood of nature, they are never monotonous and never inharmonious. Their classic simplicity gives a sense of rest, peace and satisfaction.

Although the houses are little more than cubes, they are set together in such a way that they do not offend the eye, and their square towers cut into the blue sky of California with picturesque severity. The handling of window and door spaces are particularly happy, for they are varied by a square or a circle placed where each will give the most telling effect. Each cottage is entered through a loggia that serves as a lounging room by day and a sleeping porch by night Each cottage faces the garden and has a garden plot of its own, leading to the central pergola where all the tenants assemble. This pergola is constructed of concrete pillars and eucalyptus beams. It is thirty-seven feet square and is furnished with rustic tables and chairs, and overhung with luxuriant vines such as only California can produce. The little creeper, *ficus ripens*, has been depended upon to grace the doorways, and no ornament made by man can equal in delicacy or grace the decorative effect that it creates.

In addition to the aesthetic success of this severely simple apartment house it comes as near to permanent construction as it is possible for mankind to attain. The Sierra Madre Garden Apartment Houses have proven so satisfactory that the experiment has been twice repeated by Mr. Gill in San Diego. Of course, the designs are very different, but the spirit is the same. Each apartment is entered through a garden and has a garden of its own. The arch has been called upon to relieve the severity of the cube. All ornamentation has been left to the gracious skill of vine and flower.

The buildings are of concrete, and steel and whoever passes the chastely simple dwelling houses cannot but feel that any deviation from their architectural simplicity would result in a loss of dignity.

Mr. Gill depends for his effects upon the beauty of straight lines; the force of light and shade; the power of balanced masses and the fascinating play of color as it passes before the plain background of concrete walls.

Honesty, frankness and simplicity characterize the exterior of these houses; comfort and loveliness pervade the interior. Mr. Gill designs his houses from the center of the street to the heart of the house; that is, he directs the planting of the street trees, the laying out of the gardens and

GARDEN APARTMENTS, SIERRA MADRE
IRVING J. GILL, ARCHITECT

GARDEN APARTMENTS, SIERRA MADRE
Irving J. Gill, Architect

GARDEN APARTMENTS AT FOOT OF SIERRA MADRE MOUNTAINS
Irving J. Gill, Architect

GARDEN APARTMENTS, SIERRA MADRE
Irving J. Gill, Architect

the position of the flowers in the garden. Although he believes in absolute severity of walls, he also loves the rioting beauty of flowers. He takes pleasure in seeing all the colors of the rainbow flashing like a dream against the peculiar surface of his houses. Every flower thus creates a double beauty—that of its own life and its mirrored reflection on the wall.

During the last few years we have learned that living is a far pleasanter art when it is shorn of the myriad complications that are non-essential. Now that it is possible for us to relax our vigilance in the matter of thrift we find that we are more wise about the spending of our money. We will always spend liberally, but in the future our generosity will be wise rather than foolish.

Ruskin has told us that we should put the money spent in needless ornament into the foundation of the house. We who are interested in making America a land of beautiful homes cannot but feel that if useless ornaments were discarded there would be funds enough for lovely gardens. And is there any human being who would not rather have a growing vine than a mosaic, or a living rose than its sculptored counterpart?

Apartment houses such as Mr. Gill has designed in the West insist upon being surrounded and filled with a garden. The superintendent of such apartment houses must also be a gardener. He must know how to mow a lawn as well as feed the furnace. Whatever we demand, we get. The fault lies in the limitation of our demands. If we insist upon gardens (even for apartment houses), we shall have them.

These photographs of apartments now established in the West advance our ideals. Truly, there are sermons in stones and also in severely simple apartment houses, substantially built and inseparable from a garden.

* * *

The Merit and Fate of California Architecture

THE architectural magazines of the East are including more and more among illustrations the best work produced on the Pacific Coast. It is true that in Eastern, Middle Western, or even the Southern States, most of the California work is not capable of reproduction or even of healthy adaptation. In consequence, the publication of the examples will not help architects in those parts as models for their own work, yet the charm and exotic effects of the Sunny California work is irresistible in its suggestive quality. Where it is lacking in material for actual service as a model it should furnish to those who understand its intention an inspiration which will extend into work of a radically different school.

California work, particularly in residences of the higher class, around Santa Barbara, Los Angeles or San Francisco, inevitably leaves the impression, the feeling of freedom, the liberation of one's traditional fetters, which an exhibition of no other architectural style in America can do.

It has that intangible aspect that can be felt only through the senses, called "charm." Added to this is the quality of the light in which it is photographed, the light that has compelled the attention of camera men everywhere. There is a consistency in the architectural style of California's best residence work, and truth to its locale in every way. And surprising is the fact that its best and truest lovers are Easterners all—Myron Hunt, Willis Polk, Bertram Goodhue, Louis Christian Mullgardt and Arthur B. Benton—to name a few whose work sparkles like gems—works that help to restore in the jaded architectural critic again a high understanding of architecture's capacity; works that redeem architecture against all its sinners and their sins; works that inspire the renewed faith in the art and its necessity to the human race.

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Seen both in its reality and in its picturing, it reminds one again through its similarity of climate and light of the work of other sunny countries and of other times—Spain and Italy and Greece. For it seems that only under such suns does architecture reach fullest over and beyond the intellectual appeal, to give forth a call to that truest of all standards, the human feelings. Gothic, in its austere, intellectual beauty, was never so universal, so far-reaching and so human in its appeal. It is great architecture, but does not reach the human heart as does the architecture of the sunny countries; and so, of all American architecture, that which stirs the emotions deepest and raises one farthest out of one's self, even though it be for a fleeting moment, is the architecture of California in its highest exemplification. May the work of these artists in stucco be more lasting than their actual buildings!

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And yet though these productions have no lasting quality in a purely monumental way, their suggestive charm, the magic haze that we see them through, extends their influence in an indirect manner into other climes. There they may not, it is true, be copied, or even adapted, and thus as architectural examples have not any power of reproduction or transference; and so may only serve as inspirations for better work, through the

emotion of pure beauty and loveliness they generate in those who behold them in their original form.

All native architectures possess to some degree this quality of exoticism, but with California's best architecture this exotic quality is rarer because developed in conditions of isolation and climate— a unique combination of the light of a certain latitude combined with the temperature of another, and at a distance from the rest of the world which permitted the freedom of initiation which goes with absence of dogmatic precedent, plus that greatest of all stimulants to the development of art—wealth.

This is both the merit and the fate of the best California architecture —that it is so fitting amidst its own conditions as to appeal to the most delicate sensibilities by its beauty; but again, just because it is so much a native growth it cannot be transplanted under other conditions. Its joyousness may inspire like joyousness, but cannot be built into structures elsewhere, though they may be copied line for line. Nothing tangible can be taken out of the architecture of California.—Building Review, New Orleans.

MR. MULLGARDT'S ANSWER

RELATIVE to the interesting article published in the Building Review of New Orleans, it is perhaps somewhat of a surprise to be told from the outside that California has an Architectural style of its own. To some of us it seems as if certain parts of our beautiful State had been littered with a type of bungalows sadly suggestive of the dolorific strains produced by an old-time organ grinder, because the one is as nearly painful to look at as the other is to listen to.

It would seem quite right to state, as has been said, that similar work to that of our best type of California architecture could not be equally attractive elsewhere. California's good architecture must appeal to the senses largely because of its appropriateness to climatic conditions and its inherent qualities, reminiscent of sunny climate and early history which truly belongs to California. I agree with the writer of the Building Review of New Orleans that it would be impossible to satisfactorily transplant California architecture to other states of the Union. This acknowledgment, I consider, applies in a similar manner to most architecture and places. New England Colonial architecture, for instance, does not appear at home in California.

It will be remembered that Europe is subdivided into many units, each of which has its particular style or styles, customs and traditions. America is similarly divided, and in a large degree has varying customs and traditions as is true of Europe. I consider that such varying customs and traditions as do exist should be permitted to influence the development of that or those styles of architecture which seem most appropriate and native to each section. It is in a sense imperative that architecture be developed traditionally as the best in architecture is art and all art is largely and properly based on sentiment.

L. C. MULLGARDT, F. A. I. A.

* * *

No Need to Worry About the Future

BUILDING all over the country is behind about three billion dollars. We curtailed our buying about eight billion dollars a year to spend the money to get the Kaiser. After having shelved the Kaiser, the country has to work to fill the empty shelves of the stores.

The Old World will have to buy about seven billions' worth of our materials a year, at least for two years. South America needs two billions a year. Yet, there are people among us who worry about the future.

Suggestions for Local Own-Your-Own-Home Campaign*

AMERICA needs homes. Various authorities estimate the dwelling shortage in the United States at from five hundred thousand to one million.

To build a home is to supply that which meets a pressing need. If a city is so fortunate as to have adequate dwelling facilities obviously it would be imprudent to go in for an Own-Your-Own-Home campaign. Such cities are few. The vast majority of cities come out of the war almost a year behind in their home building. The Own-Your-Own-Home campaign, therefore, is fundamentally sound because it meets a pressing need.

America needs an immediate revival of normal business. Building is a basic industry. The construction of a house creates a diversified demand for materials. It tends to stimulate business, from ditch digging to banking. Wherever a house is built there is a stimulus for business, so the material benefits from home-building activity are scattered over the entire country.

America needs an immediate augmenting of its capacity to absorb labor. Building and its correlated industries offer a logical field for providing buffer employment for labor while the country's industrial and commercial organization is making the transition from war mobilization to peace production. A home-building campaign quickens the labor market in the community where the home is built: it provides a community insurance against the social ills which invariably follow in the wake of unemployment.

Here are the three realities of a situation now confronting our cities and the nation. On these three realities which have an immediate bearing on our material welfare, even on our social progress and national stability, rests a superstructure of incalculable spiritual benefits profoundly desirable at this period in the nation's history.

The hard-headed, far-seeing business man will agree that artificial stimulation of business always brings such a reaction as justifies grave doubts as to the soundness of such a policy. He will see, too, that here is a proposition, sane and business-like, sound in its economic phases, because (1) there is a real demand for that which it is proposed to build, (2) building is a natural stimulus for business and commerce now halting and holding back, and (3) the more immediate the resumption of business and commerce the sooner the unemployment menace, with its unrest and incipient disorder, will fade before such demands for labor as will be incidental to an era of unprecedented prosperity and industrial activity.

Government supervision and direction, extended through the country in almost every activity to serve the exigencies and necessities of war, has been withdrawn. Individual and corporate initiative must again be the presiding genius in our progress. For this initiative to be timid and hesitate is to invite very serious embarrassments. Professor Irving Fisher, of Yale University, one of the foremost authorities on price and industrial matters, makes this significant statement:

> The fundamental practical question confronting business men is whether the general level of prices is going to fall. In my opinion, it is not going to fall much, if at all. We are on a permanently higher price level and the sooner the business

*Prepared by Information and Education Service, United States Department of Labor, Washington, D. C.

men of the country take this view and adjust themselves to it the sooner will they save themselves and the Nation from the misfortune which will come if we persist in our present false hope.

The fact that building is a local industry is always a chief argument in its favor. Not only is the labor of the community required, but economical considerations cause the use of materials close at hand—lumber, brick, or stone, as the case may be—and men of many trades, townsmen, and perhaps neighbors, are required to put in place what has been bought near by. For this reason the promotion of building assures the most equitable distribution of work and a general speeding up of local trade.

When extensive building is started in any community there is soon a rivalry that promotes wide activity. The standard of architecture improves and the color of paint on a house becomes a matter of importance. Interior decoration is studied. Beauty becomes a dominant consideration, and soon gardens bloom where there were unkempt dooryards. From the home the building idea spreads to schools and churches. Thus the whole community is transformed. Repairs no longer are likely to be neglected. The sleepiest village aspires to be a town, while the laziest town begins to be a city.

Since the owner of a home naturally has a personal concern in the administration of public affairs he assumes a leading part in the community. He has taken root and is no longer a drifter. He has an object for which to work and to save money. His family shares with him this sense of responsibility. Better living conditions increase efficiency, impart the stimulating influence of happiness, and insure a high morale. Home-owning affords the best environment for childhood and lays the foundation for good citizenship. It creates reserves for periods of misfortune and for old age. It is the foundation for the best sort of patriotism.

At this period of industrial readjustment the Own-Your-Own-Home campaign has a special importance. Small projects are easier to start than large ones; they are the logical point from which to advance to big building enterprises. Through them confidence will be established, for every builder will be rendering a patriotic service in thus proving his faith in his country's power safely and quickly to readjust its business to the changed conditions following a great war.

To the thousands of returning soldiers home will have a new meaning after the sacrifices of war. They are coming back to familiar towns and cities where there is a lack of housing because of suspended construction, and, if they are engaged in building, they will have the sort of employment that gives them a sense of partnership in aiding the development of communities to which they belong and to which their military service has added a lasting glory.

In home-building a new phase of patriotism is expressed. For this reason mayors of cities should co-operate with chambers of commerce, real estate boards, women's clubs, and other organizations in promoting a Government movement which represents the most practical of all reconstruction efforts.

The national campaign must be sustained by local campaigns, thoroughly organized and scientifically conducted.

It is important to keep in mind that the attitude toward an Own-Your-Own-Home movement must be, first of all, that of interest in civic, social, and business betterment. The prospective home owner's interest equals in importance that of all other elements combined. For this reason he should have representation, majority representation if possible, on the

general and subcommittees. In localities where labor is organized the unions should have liberal representation, for the reason that they are vitally interested and they have the working organization for getting over to the working people the intent and possibilities of the campaign.

As a means of stimulating individual effort, and, through the co-ordination of individual efforts, the development of the best community interests, Own-Your-Own-Home campaigns have proved to be aids to present-day business enterprise and largely conducive to sustained progress in civic development. At this time they have a new significance, since they present a practical method of providing employment for returning soldiers and stabilizing labor during the period when transition from a war to a peace basis presents a serious national problem. It is as much a patriotic duty to build now as it was to render service and to make sacrifices in all possible ways during the war. The process of readjustment demands the same sort of loyal effort, the same energetic action that the ordeal of war preparation imposed.

Own-Your-Own-Home campaigns have been tested in a number of cities and invariably have been successful. First, they have awakened local pride and unified civic ambitions. They have aroused a pull-together spirit which has brought about many community benefits. A building movement is the one public undertaking that makes the double appeal to municipal pride and personal interest. It promises profit to everyone, from the architect who draws the plans to the laborer who makes the excavation. But not only carpenters, bricklayers, stonemasons and other skilled artisans are concerned. Men of widely varying occupations must contribute to construction needs. The local dealer in hardware, the merchant who sells gas and electric fixtures, the man who handles wall paper and paints—all are needed.

* * *

Will Owners Take a "Sporting Chance?"

CANNOT the architects convince their clients that it is at least worth while to take a "sporting chance" right now and have plans made and the bids taken? And pay the architect for his trouble besides! This relatively small expense is the only "chance" the owner takes in the matter, as the contractors, while stating that they are wasting their time to some extent in figuring jobs that never go through, are yet willing to continue doing so because it is clearly to their best interest to assist in the resumption of building activity. Every job that is figured does not fall flat; a good percentage of them are ready to be signed up, and this percentage is steadily increasing.

It simply means carefulness must be exercised on the part of the architect in conserving every item possible in plan and design; in not making absurd guesses for the owner's benefit. To induce the owner to take a "sporting chance," so to speak, in getting the plans under way and compensating the architect. The contractor will do his level best to land the job. The result, among other things, will be a closer getting together between the architect and the contractor, in the wholesome endeavor of getting the job through, and on the whole a more outspoken and practical view of the whole transaction on the part of owner, architect and contractors.

It is up to the dealers to do their level best—and the question has arisen, and is a serious one. Are they doing so?—Building Review.

RESIDENCE FOR MR. KING
J. R. Miller, Architect

Some Architectural Scale Models

Executed by BERTHOLD V. GEROW*

ABOUT five years ago an article reviewing the annual exhibit of the N. Y. Architectural League, appeared in one of the Eastern architectural magazines. The writer, in the course of describing the work of different architects and artists on exhibition, said: "A feature, although but little accented, is the scale model, shown by several examples in this gallery. There can be no doubt that the laity will be better able to understand the appeal of a work of architecture when presented in this form, and it is hoped that there are more scale models in future exhibitions. It is significant of the interest they create that visitors tarry longer in their examination of models than in the other architectural exhibits".

Five years ago a scale model was something of a novelty but today it is recognized as one of the necessary adjuncts to the architectural profession. This is proven by the fact that scale models are very rapidly supplanting perspectives and rendered sketches as a means of portrayal and presentation.

There are several reasons for this—the principal ones are that to the architect they offer for all purposes a method of study that is unsurpassed. By their means the most intricate problems in architectural design may be easily and accurately worked out. Any weakness or defects in the design can then be quickly perceived and corrected, thus obviating the making of numerous unnecessary sketches.

Furthermore a scale model is the only medium (outside of the actual construction of the building itself) by which the third dimension can be accurately studied.

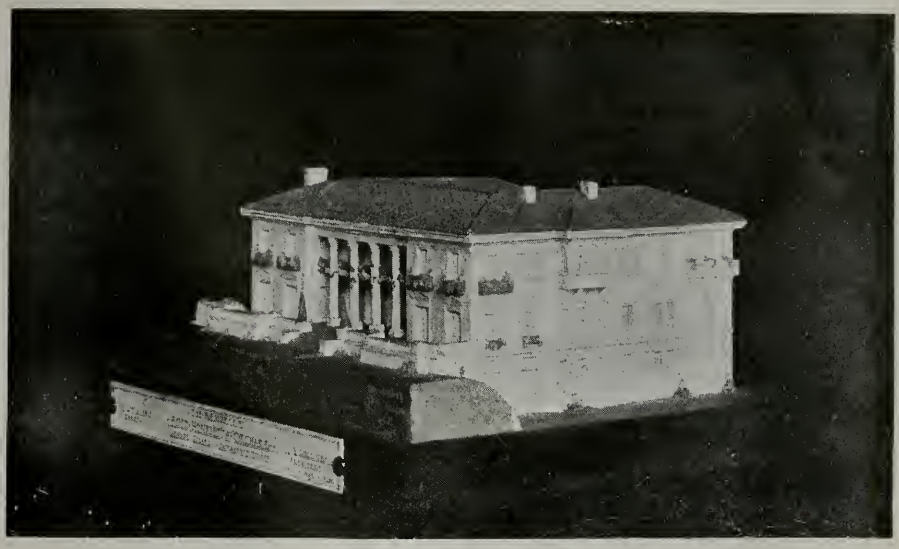
In most cases however, it is to the client that the model renders the greatest service, for by studying the floor plans, etc., in conjunction with the model, he is able to see how his building will actually appear when completed.

Although most architects now recognize the value of the scale model and many of the larger architects employ a model maker in their offices continuously, it has been the writer's experience that a great many architects still labor under the impression that only where the proposed structure is to be of a very considerable cost and the architect's commission proportionately large, are they justified in having a model executed.

*116 Natoma St., San Francisco.

DESIGN FOR RESIDENCE
Howard & White, Architects

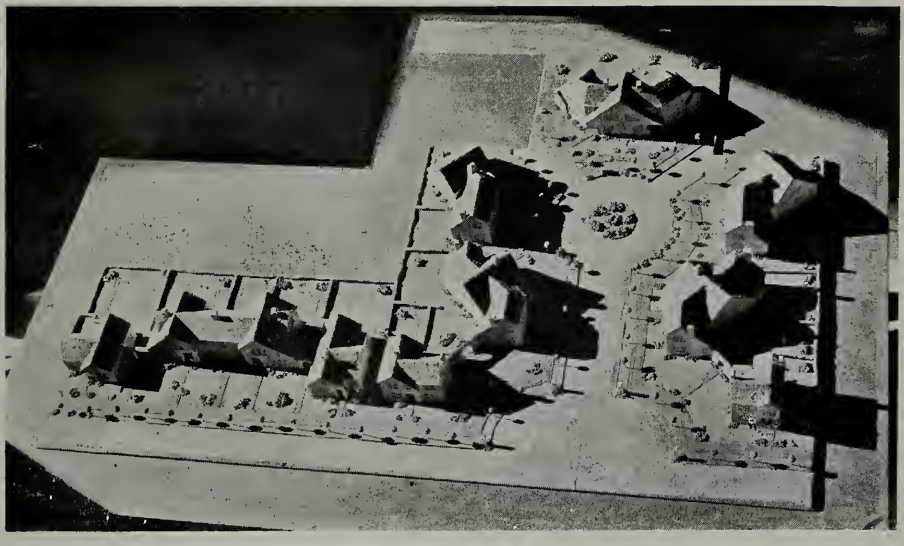
FACADE, HIPPODROME THEATRE, SAN JOSE
Binder & Curtis, Architects
Weeks & Day, Consulting Architects



RESIDENCE FOR ROSE HENRIETTA ORCHARD
J. W. Dolliver, Architect

That this impression might be corrected the writer has selected photographs of models of representative types ranging from small houses to large buildings. These models were executed by him during the past year for the architects over whose names they appear and although they were prepared for many and varied purposes such as exhibition, study, competition and presentation, in no case did the cost of the model exceed one-half of one per cent of the cost of the finished structure and in most cases it was nearer one-fourth of one per cent.

While this rule may be applied to structures costing from ten to twenty thousand dollars or more it will not apply to buildings costing



GROUP SCHEME
C. H. Cheney, Architect and City Planner

HOUSE AT
PALO ALTO.
W. H. SCHIRMER,
ARCHITECT.

less. However, it is very seldom that even a perspective is justified on buildings costing less than ten thousand dollars.

* * *

Notes on the F. W. Bradley Residence

THE original house, built several years ago and entered from Broadway, was changed and enlarged so that the main entrance now faces Pacific avenue, San Francisco. To frame this approach, additional property was acquired on Pacific avenue, and one residence was torn down while a second was remodeled so as to form an architectural treatment to the main house. This has been designed in the Georgian style of architecture.

To approach the house, one enters the Pacific avenue driveway through a garden planted on both sides, to a large paved court. From this court, one may enter the main house or take the stairs to the garden, from which may be had a wonderful view of the bay, with Alcatraz island off to the northeast.

The garden is a remarkably successful treatment for a city residence. Mr. Chas. Peter Weeks is the architect and Mr. John McLeran was in charge of the landscape work.

* * *

Bituminous Carpet on Concrete Roads

Thin bituminous carpets are not now ordinarily laid on new concrete roads. Where such carpets are used at all, the common practice is not to lay them until the concrete surface has been subjected to considerable wear. Bituminous surfaces stick better to warm concrete than to new concrete. But the main reason for postponing the application of a bituminous carpet is to secure the maximum amount of wear from the concrete surface before covering it with a bituminous wearing coat.

It is still a debated question whether a thin bituminous carpet should be laid at all on concrete. If it is thin it does not serve to distribute the wheel load over the concrete; hence a stronger concrete is needed than where a fairly thick asphalt is used. A thin bituminous carpet on a lean concrete base is undoubtedly an economic mistake. But if a lean concrete is used, should not a fairly thick asphalt wearing coat be applied at once without waiting for the concrete to wear? Lean concrete is apt to wear very unevenly, resulting in a wavy or pitted surface that is not a very satisfactory base for an asphalt pavement.—Exchange.

Building Prices — Down or Up?

By GEORGE E. BURLINGAME*

THE sentiment expressed by a writer in one of the investment magazines that "building costs are 70% higher than in 1914 and are far too high" has been thus far, evidently, the emphatic sentiment of the country. With nearly half the year gone and with perhaps the most extraordinary demand for houses the country has ever witnessed, construction has proceeded at about 20% of normal.

This inactivity, it was insisted, must unquestionably set prices tumbling.

Prices, however, remain essentially as they were. The slight drop early in the season has been in the aggregate more than recovered. And so the far-sighted man whose building requirements are becoming more and more pressing has stopped arbitrarily repeating to himself the dogmatic formula "prices have got to come down," and is now asking himself quite seriously to what extent it is the wish alone that is father to that belief and what the factors are that must inevitably be reckoned with in any price changes that are to come about.

Prices, of course, are the sum of costs plus profits.

Costs are made up of the cost of the raw material and the cost of labor—the tree in the forest or the ore in the ground, and all the various processes of labor, direct and indirect, required to convert it into the finished product, to transport it to market and to transact all the business and keep all the records incidental to this conversion and marketing.

Profit is what is left after all these operations have been paid for and interest on investment has been taken care of, and represents compensation for risk assumed.

It is clear that a reduction in price cannot be secured without equally reducing one or more of these elements that make it up and that the extent to which a price can or will be reduced is exactly equal to the extent to which the elements which enter into it can or will be reduced.

The cost of the raw material in its natural state before a stroke of labor has been put upon it constitutes so small a part of the finished commodity that it may for the purpose of this discussion be disregarded.

To reduce the cost of labor means either an increase in efficiency or a reduction in wages or an equivalent combination of the two. In efficiency neither clerical, mechanical nor administrative labor can in the very nature of the case come up to normal for a considerable period while organizations are being re-formed, men are becoming re-accustomed to their work and business associations are being re-established. And it has been made unmistakably clear by organized labor and is now very generally conceded that wages will not be reduced.

What is the promise in the direction of reducing profits?

Since the begining of 1919 every possible pressure has been exerted to force down the prices of building materials. First on the part of the general public, which had been led to expect such a reduction and insisted upon accepting no other solution; secondly on the part of the Government, which was straining every effort to increase industrial activity so that it would take care of the great army enlisted and otherwise engaged in war activities, that soon must be reabsorbed into normal civil life, and to meet the menace of Bolshevism through unemployment; and finally on the part of the manufacturer and producer, who could see not only the Governments' point of view and practical self interest in a program that

* Mr. Burlingame is a well-known San Francisco contractor who has resumed his business after nearly two year's absence in the government service.

would stimulate consumption to the maximum, but, himself convinced that prices were going to drop, was willing to unload his stock at a small loss rather than be compelled to take a larger one later.

Due to this pressure there was, during the early months of the year, a downward movement of prices. This reduction had to come out of the profits, for the labor costs, it was found, could not be lowered.

The fact that prices are now on the upward move appears to me to indicate that so far as cutting the profit margin is concerned the bottom has been substantially reached. While the present upward tendency is undoubtedly influenced by the consideration that falling price conditions discourage active buying, I believe it is primarily due to a steadily increasing demand and to the feeling that no further good is to be gained by holding to an unsatisfactory margin of profit.

Not being an historian, a financial expert or a statistician, it is perfectly ethical for me to deduce a conclusion from all this. It is likewise entirely safe, for the skies will not fall if I am wrong. It seems very clear to me, however, that building costs positively are not going down; that in fact such fluctuations as there will be will have an upward rather than a downward tendency.

The fact that business failures reached during April the lowest level in thirteen years seems to me to signify that there is a growing tendency to conduct business on a wider margin of profit and if business becomes as active as is anticipated this tendency is quite likely to increase. It is very much more certain that wages will not go lower than that they will not go higher. It is evident that the present steadily mounting deficit in the operation of railways cannot continue to be taken care of by taxation after the roads are turned back to private ownership and that freight rates may be affected.

"But," I hear someone say, "it takes a buyer as well as a seller to make a sale. You cannot jam prices arbitrarily down the throat of the general public." The answer is, neither can you force the seller to sell at a loss. It is also well to remember that the general public is seller as well as buyer and that its attitude as buyer will be influenced by its attitude as seller.

Ultimately the public must pay a price equal to the cost plus a reasonable profit, and this it will pay if it desires the goods. The automobile industry has been built up on this unfailing fact. The Public has long since become adjusted to the idea of paying double prices for shoes, clothing and provisions, but it has continued to think of building costs in terms of 1914 prices. It will, however, hesitate to accept the new price level only until it becomes assured that this level is not going to be lowered and that nothing is to be gained by further waiting.

Underlying the whole question of higher prices, however, as the tide underlies the float, is the enormous increase in the world's circulating medium. In a short four and a half year period, to quote Mr. O. P. Austin, statistician of the National City Bank of New York City, world paper money has increased thirty-six billion dollars, world evidences of national indebtedness one hundred and eighty billion dollars and bank deposits nearly fifty billion dollars.

Does it seem illogical, then, that with such a vast increase in the world's currency its value in terms of commodities should decrease? Does a decrease in purchasing power of 41% seem out of proportion when legal tender has trebled and when that other form of currency, Government obligations, has been quintupled? Does it look as though the consuming public would be unable or unwilling to launch building opera-

tions at a 70% increase when bank deposits have grown to three times their amount of five years ago?

To the question of whether an early decrease in the world's currency may be reasonably expected Mr. Austin answers: "Present indications are that the governments of the world will be compelled to collect in taxes from their people about fifty billion dollars a year as against about twelve and one-half billions in 1913, and this does not include anything for sinking funds or other provision for outstanding debts." If this be true is it probable that these governments . . . will find it advisable or possible to reduce materially the amounts of currency available for such payments?"

The fact that the United States has become a creditor nation to the extent of ten billion dollars, whereas in 1914 this was a debtor nation by a margin of five billions, together with the fact that we are entering upon what appears to be a period of unprecedented export business, must also contribute to produce an abnormal volume of currency in the country.

The statistician of the Bureau of Labor has also been busy plotting price curves of all the wartime and reconstruction periods since the fall of Jericho. The Bureau's study of the movement of prices during the Civil War and during the World War cannot, of course, show an absolutely accurate and complete comparison, but the data given is very suggestive.

"In both wars," runs its report, "building materials rose, but they did not at either time reach levels as high as the price levels of other commodities. . . . Building materials declined in price along with other commodities during the first half of the year 1865. However, the fall was less than in the case of other commodities. The recovery during the second half of the year was more marked, prices of building materials returning to the level of the last quarter of the year 1864 and remaining at that level for a period of a year before the decline set in. The index figure for the building materials group remained higher than that for all commodities up to and including the year 1874. It was thirteen years after the Civil War before prices returned to the prewar level."

On the whole there seems to me to be excellent reason for the conviction that the man who at this time adopts the policy of watchful waiting until material prices go down before starting his building operations will shortly find himself outdistanced and will ultimately pay a price even higher than he must pay today.

With the country's building program at least two years behind, the demand for buildings is perhaps the greatest and most widespread that has ever been experienced. I have very recently had the opportunity to inquire personally as to housing requirements in various sections of the country. Everywhere, in the cities and towns, the smaller villages and on the farms, the need of buildings is uniform and the intent to proceed with construction at an early moment universal.

The seeker for accommodations of any sort finds he has slight choice. With increasing demands for houses, with increasing taxes and increasing cost of upkeep, rents are inevitably going higher. And that is saying nothing of the fact that those who are dependent upon rentals for their income are entitled to bring that income up to meet the increased cost of living. Renters, therefore, will be inclined more than ever to seek the other alternative to paying high rents for unsatisfactory quarters—that of owning their own homes.

There is evidence everywhere that not only is the country overflowing with currency and securities easily convertible into currency, but this

HOUSE FOR DR. FENTON, PORTLAND, ORE.
WADE PIPES, ARCHITECT

currency and these securities represent more widely distributed savings than has ever before existed in the country. The average man has become a capitalist in the best sense of the word. His thousand dollar bond together with his increased income will enable him to finance the building of a home today at today's prices far more easily than he could have financed it in 1914 at 1914 prices.

"To talk reverently of 1913-14 prices is to speak a dead language today," emphatically remarks Professor Irving Fisher, the Yale economist. "We are on a new price level which will be found a stubborn reality."

ST. FRANCIS WOOD, SAN FRANCISCO, WHERE ARCHITECTURE AND NATURE BLEND CHARMINGLY

War Memorials*

THE AMERICAN Federation of Arts on January 2nd, issued a circular letter containing suggestions for the treatment of war memorials. That letter contained a statement that an advisory committee would be appointed, whose services and advice can be placed at the call of those throughout the United States who are considering the erection of war memorials. This committee has now been appointed and announcement of its personnel is made herewith.

The purpose of this committee is to deal with the entire subject of War Memorials in such a way as to afford assistance to officials, commissions and committees who are earnestly endeavoring to make the memorials of the Great War express in a permanently satisfactory manner feelings of honor, sacrifice and patriotism.

The Federation is strongly of the opinion that the American artist should be called on to design and to execute any structural memorials of this war, and that in every community the memorial should be an individual, artistic creation. Too often it has happened that war monuments in the past have taken the form of stone or metal soldiers, with little or no variation in design and utterly devoid of artistic feeling and expression—the products of the shop, not the studio.

The Federation expects members of the General Committee to confer with any organization which is about to erect a war memorial, in order to influence the decision in favor of a work having artistic merit, and to acquaint the members of such an organization with the proper methods to be taken in order to secure that result. Pains should be taken to make organizations understand that the Committee is not interested in any particular form of memorial, or in any particular artist or group of artists, the only end in view being a memorial worthy of the community and the cause.

Members of the General Committee may be consulted on the choice among various forms of memorials, and also as to methods of selecting a designer and bringing the work to a satisfactory conclusion. Any person interested in obtaining fitting memorials may write to the Secretary of the General Committee for information touching any phase of the matter. The aim is not to dictate but to be helpful. The Federation is convinced that thoughtful attention at the beginning of the project will bring good results. The enterprise is a great one,—the adequate commemoration of a noble cause by memorials expressing the highest attainments of American art.

For the guidance of its members, as well as of advisers and persons charged with the duty of erecting war memorials, the General Committee of the Federation of Arts has adopted the following principles, which are substantially the same as the ones laid down by the National Commission of Fine Arts and approved by the National Academy of Arts and Letters:

Memorials may take many forms, varying with the nature of the site, the amount of money available, the desires and needs of the community. Among many types these may be mentioned:

A Flag Staff With Memorial Base. The expense may be little or much, according to the simplicity or elaborateness of the base and the extent of the architectural setting. There is one type of staff to be used in connection with buildings, and quite another suited to an isolated situation. There is variety in

* Office of the secretary, 1741 New York avenue, Washington, D. C. Mr. Charles C. Moore, Sheldon building, San Francisco, formerly president of the Panama-Pacific Exposition, is a member of the General Advisory Committee.

flags, also. The great, undulating, sumptuous silken folds of the Venetian flags on the piazza of St. Marks are the extreme of art in flags. Something of this kind and quality we may aspire to in decorative flags.

A Fountain, which may be designed so as to afford places for inscriptions. A fountain may be simple in extreme or most elaborate. It may cost one thousand dollars or tens of thousands. Well placed, it is one of the most permanent of monuments. In European cities fountains are enduring, attractive, useful, and distinguished features. Americans are just beginning to realize the possibilities of fountains as memorials.

A Bridge, which shall get its chief beauty from its graceful proportions and the worthiness of the material used. The bridge should be built to last a thousand years and to be a continuing delight during that period. The memorial features may be furnished either by tablets or sculpture or monuments at the bridge approaches.

A Building, devoted to high purposes, educational or humanitarian, that whether large or small, costly or inexpensive, would through excellence of design be an example and inspiration to present and future generations, expressive of the refinement and culture which mark the highest order of civilization. It should, however, be understood that a building entirely utilitarian can not altogether satisfy the desire for a commemorative work of art. The transept of Memorial Hall at Harvard University is an example of the triumph of memorial feeling over utility and even architecture.

Tablets, whether for out-of-doors, or for the walls of church, city hall, lodge room or other building, offer a wide field for the designer. These tablets get value from the beauty of form and especially from the design of the lettering. The inscription should be designed even to the names of individuals, and should not be made from type kept in stock by the tabletmaker.

Gateways to parks or other public places afford a fitting and expressive method of commemoration. Here, too, the architect and sculptor may find full play for their fancy.

Symbolic Groups, either in connection with architecture or isolated, depend for their interest on the universality of the ideas or sentiments depicted and the genius of the sculptor. Success is not impossible; but talent of a high order alone can achieve it.

Portrait Statues of individuals are a favorite form of commemoration. A portrait statue which is also a work of art is not an impossibility, but it is such a rarity that committees should exhaust other possibilities before settling on this one.

Medals. To make a good medal is one of the most exacting things an artist can be called upon to do. Properly to execute a medal takes much time and study, even from the most skillful and experienced. It is not the work of the die-maker, or for the artist who works simply on paper, or for a combination of the two. The designing of a medal should be entrusted only to those who have a fine sense of composition, skill in draughtsmanship, and a knowledge of the subtleties of relief. Not only is the space limited, but the range of ideas and motives adapted to relief is limited. People are inclined to ask too much to be told on a medal. While a sketch on paper or a water color may be valuable as a preliminary step, an order to strike the medal should never be given until the design has been developed in relief, as even a very careful drawing may give a false idea of the relief itself.

Stained Glass Windows offer a field commonly resorted to, and with varying success. The subject is one requiring special study and consideration, and should only be taken up with competent advice.

The Village Green, which exists in almost every small town or may easily be created. Usually this common is ill-kept and without symmetry of form. It might readily be laid out for playground and park purposes, and so improved and maintained. A fountain with a seat carrying an inscription, or a tablet well designed, would form the center of memorial interest.

Other kinds of memorials (such as bell towers, band stands, memorial doorways and memorial rooms) will suggest themselves. Any form that can be made to express feelings of honor, respect, love of country, devotion to freedom and the glory of the triumph of democracy will be appropriate. If the utilitarian structure shall be used, it is of first importance that it shall impress the beholder by beauty of design, the permanent nature of the material used and the fitness of the setting. What shall be done is less important than the manner in which it is done.

In any case where it is decided to erect a memorial, the first step for the individual or committee having the matter in charge is to seek the advice of some one trained in the arts to act as an adviser, and to confer with him in regard to the location, whether out-of-doors or indoors. If out-of-doors, the site is of prime importance. Crowded thoroughfares are to be avoided. Works of art should not be obstructions to travel, either at the time of erection or prospectively. It should be borne in mind that a work of art is not noticed when placed where crowds continually pass it. People will go a distance to enjoy a masterpiece and, unless a memorial has such distinction as to command attention and admiration, it fails of its purpose.

The type of memorial is the second subject for consultation with the professional adviser. He should know how to spend the money available in the manner best suited to carry out the purpose intended:

The selection of the artist should be made with the assistance of the professional adviser. The site and type of memorial having been determined, the adviser should be able to furnish a list of the artists, whether architects, sculptors or painters, who have established reputations for executing the particular kind of work in view. One of these artists should be selected, after an examination of his completed work, and the commission should be given to him. The adviser should be retained, in order to make sure that the completed work in all particulars (including, of course, the inscriptions) conforms to the best standards. No lay committee is competent to pass judgment on these essential elements. Then, too, the adviser should see to it that the landscape or other setting is in harmony with the design, and is calculated to enhance the memorial.

Competitions are sometimes imperative. In such cases, the professional adviser should draw up the programme and conduct the competition. Artists of high standing often enter competitions limited to selected artists of established reputation; they rarely enter unlimited competitions. In any competition the essential elements are, first, a good programme; and, secondly, competent and impartial judges.

Methods of conducting competitions have been formulated by the American Institute of Architects, the National Sculpture Society, and the National Society of Mural Painters. These methods should be followed by the adviser.

The most impressive monument is one which appeals to the imagination alone, which rests not upon its material use but upon its idealism. From such a monument flows the impulse for great and heroic action, for devotion to duty and for love of country. The Arch of Triumph in Paris, the Washington Monument and the Lincoln Memorial are examples of such monuments. They are devoid of practical utility, but they minister to a much higher use; they compel contemplation of the great men and ideals which they commemorate; they elevate the thoughts of all beholders; they arouse and make effective the finest impulses of humanity. They are the visible symbols of the aspirations of the race. The spirit may be the same whether the monument is large or small; a little roadside shrine or cross, a village fountain or a memorial tablet, speaks the same message as the majestic arch or shaft or temple, and both messages will be pure and fine and perhaps equally far-reaching, if the form of that message is appealing and beautiful. Display of wealth, ostentation and over-elaborateness are unbecoming and vulgar. Elegant simplicity, strength with refinement, and a grace of handling that imparts charm are the ends to be sought. These ends require, on the part of everybody connected with the enterprise—committee, adviser and artist—familiarity with the standards of art, and above all, good taste. Only by a combination of all these elements can a really satisfactory result be obtained.

Another Letter from Mr. Ernest Coxhead, A I. A.

On Active Service with the American Expeditionary Force.
April 13, 1919.

Dijon Côté d'or.

HERE I am at Dijon where I arrived last Saturday by Auto from Beaune University with forty student architects (30 enlisted men—10 officers) in my charge as "Chief of the Field Section". The students following me by train under orders of Military Assistant Major Warren who is a fine fellow.

I return with the men to Beaune tomorrow—Monday night, and then the organization, which constitutes the advanced Class in Architecture, develop the drawing sketches and memoranda they have made from the many fine and interesting examples of French architecture.

On returning to the University last week I immediately held a preliminary exhibition of the work done at Dijon--about 150 drawings altogether. It was an exhibition hot off the gridiron, so to speak, as we arrived in Beaune Monday night and held the Exhibit Tuesday afternoon.

All of the big "bugs" of the university and educational Corps who were holding a convention at the time in Beaune were invited and came and were **convinced,** so that I am now able to get more readily whatever I ask for, for the Field Section work,—which means the matter of transportation to new fields for conquest, etc.

"The Field Section work of the College of Fine and Applied Arts of the University of Beaune" started in as the tail of the dog, so to speak, of the school I organized at Le Mans but now the **tail** promises to wag the **dog.**

I came here to Beaune about the 26th of February before the students began to arrive at this American University which is a collection of about 800 or 900 barracks buildings converted from a Base Hospital hastily into College buildings, Dormitories, Mens Barracks, etc., etc., and everything that goes to make up a large Camp. My College (of Fine Arts, which is one of about 14 Colleges) has about 300 students in it. The first thing I did was to make up the schedule or Curriculum—no easy matter as the courses insisted on overlapping at every angle, and complications with Army regulations occurring at every turn. Finally it was arranged and my Field Section work given its proper place of importance. At one time I had a special meeting held of the entire Faculty of our College and laid my plans before the meeting and then had to fight hard to get the program I had outlined carried.

The Faculty however, voted my schedule for Field work and I had this matter placed on record, but that was not the end, as it is one thing to get your ideas adopted and quite another to get them carried out. so I had to have another meeting called, to get them carried out. I am feeling fine and really enjoy the active work, we have now made such a fine show of drawings, **work done,** that I have to **say** less and **expect** more from the Field work. The difference between "Field work" and "Atelier work" is this: In the former the students of Architecture being here in Europe study architecture from the **Life,** so to speak, while in Atelier work they study it the same as they do in the States from the **photos** and **pictures** of the actual buildings of Europe, because the Cathedrals, Chateaux and other fine architecture over here cannot be taken to the States, Ergo, when in Europe, study Architecture from the **source.** There is no argument,—n'est ce que pas?

Now, that is **my job** to see that these young (and some old) architects, or would-be-architects, who may never get the chance again in their life time to get to France or Europe, have the opportunity to study the finest examples while staying here awaiting their turn to get back to the States.

My contract with the Y. M. C. A. expires about the end of this month; the first of May, as you remember perhaps, but since the Armistice has been signed and the Educational work started in the Army. I was transferred to the Army Educational Commission the 1st of December last, and started the A. E. F. School of Architecture at Le Mans on the 10th of December. It is still going at Le Mans, where I left an Instructor as my successor when I came to Beaune. He sends me weekly reports which show he is doing well by the School and continuing the work most successfully. The twenty men I had trained there came with me to Beaune. This was one of the conditions upon which I accepted my appointment to Beaune University. These men are a part of the Architectural Class and do nothing but "Field Work" (another condition).

I am writing this in the "Y" Hut here at Dijon Sunday evening (Palm Sunday) and the men from Beaune are many of them sitting around. They are the finest lot of men there ever was. It is some job to keep them at work from 8 in

the morning till 6 at night, as they are scattered all over town, some times I forget where they are and then stumble upon a group in the middle of a crowded street with a ladder and measuring lines, and drawing boards and Field reconnaissance intently busy on measuring a renaissance three story front. The way these fellows climb all over the buildings and seem to hang on to flat wall surfaces like flies, makes my blood run cold at times. The other day I caught one man 26 feet from the sidewalk with a tape line in his hand and holding on to a window jamb with the other (he had quit the ladder) shouting down dimensions to his partner below who was surrounded by a group of young Frenchies admiring his dexterity as a steeple jack. I called up to him to be careful and not break the edge of the molding he was standing on, and then hurried away. This is the grit that took our boys through the hot places in the front last year. I have to hold them back at times because I don't want any mishaps.

I caught one man the other day sitting "astride the saddle" Stone of a flying buttress and leaning over to sketch a particular gargolye; he was up about 30 feet above the ground. I wished I had my camera at the time. I was afraid to disturb him, but he reported "here" at the roll call, so I suppose nothing happened.

Well, I started out to tell you that all of us Educational men are now taken into the Army as **"Officers"** and I have been asked to sign a new contract releasing us from the "Y" and putting us into the new branch or corps of the Army to be called the Educational Corps.

We have taken off the Y. M. C. A. insignia and have been given the Army insignia with belts as officers. I have just signed my contract for two months from April 16 to June 16, at which time the first course of the University ends. If there is a second course of three months following this we shall be asked to sign for another three months, but it will be optional.

About your own plans, I should above all things like to have you here for awhile, but do not see how you could get the pass port, as only men on business are allowed to cross, I believe. If I do not stay on here after my new contract terminates June 16, I shall travel for a month perhaps—visiting England and the "Front" and Uncle Billie, if he is still here in France. I am allowed a month's allowance and the Army by contract has to deposit me in San Francisco free of charge. This would land me back in the States about the beginning of August and of course, I shall see you for some time in New York before going to San Francisco. However, this is figuring a long way ahead for an Army man, and you cannot tell what may happen here the next week.

Two weeks ago we were suddenly called out for grand review as General Pershing unexpectedly arrived. Then last Friday a French General came and I had to send out couriers to gather in by Field Work students, who were scattered all over the town of Beaune for another general review, and we were standing at ease and marching and manouvering for two hours to please him and show off. It's a great game! The roads and camps are about as smooth as a quarry for marching in review and as muddy as a bog. As yet I have not seen anything of **Sunny France**, although I have given the country all the opportunity possible to exhibit itself. Today it has rained like the deuce, and when it rains in the Departments of the Côté d'or, it is **wet.** Tomorrow I must buy some boots from the Q. M. Dep't. here They will probably be "salvaged", that is, second hand as all foot wear is scarce. My trench boots which I have been wearing till now are at a cobler's in Beaune,—17 Francs for resoling same. I bought gloves for Review last Friday—24 francs at Front store. My laundry is three weeks old—tonight, I have a rare change to get a shower bath and I am going to get it "Toute de suite". Last night I was surprised by finding real sheets and a pillow case at my billet here in Dijon, something I have not had since I left Le Mans. They were so uncomfortable I could not sleep.

Last evening Mr. Monges and I (Mr. Hays knows Monges and so does Uncle Al.) went to the Opera here "La Favorite". I went to sleep twice and then the final climax (we were sitting right over the stage) I think the man broke his sword or something—it clashed down on the stage and woke me up with a start, as the "Artiste" reached his top notes, I shouted to Monges "What the deuce is the man making such a hell of a noise about", before I realized where we were. We left soon after. C'est drole, as the French say. Funny! well I should say when I stopped to think about the whole shooting match, I could burst my sides with laughing, but the **men** are getting a lot of good out of all this Educational work and are happy as well, which is the main thing after all Now I really cannot start another page, as that "Baath, you know" is waiting somewhere for me.

My regards to everybody.

Yours affectionately,

ERNEST.

Continuous Reinforced Concrete Beams; What Happens at the Ends?

By LEONARD C. JORDAN, in Engineering and Contracting

THERE is considerable unwarranted variance in the practice of designing reinforced concrete beams when the ends are wholly or partly fixed. This type of construction has been greatly abused by carrying into concrete designing the practice, common and proper in timber and steel construction, of regarding all beams as simple. While it is the case that nearly all steel beams are simple, a strictly simple beam of reinforced concrete is almost as rare as a day in June—and that day the thirty-first of the month.

It is proper to design a beam as a simple one if it will be constructed as a simple beam and if columns and walls can never furnish restraint at the ends. But where columns and beams are cast monolithic and a beam cannot deflect without having tension at the top near supports, then the beam is continuous whether it is so regarded or not. It is only to be hoped that the beam will be continuous in life as well as in the nature of its stresses.

The writer is well aware that many designers take into account the true continuous nature of the beam, yet others, through specifications or employers, are restrained in their methods fully as much as the beams are restrained at supports. It is common practice with many firms to design beams, even when built solidly with rigid supports, merely as simple beams and to throw in at the top over supports 50 per cent as much steel as is figured for the bottom in the center of span. The method of construction renders these beams continuous. And, unless there is partial or complete failure, the top steel must take all tension resulting from negative moment. Since it is true that beams of this type generally withstand the strain to which they are subjected, the questions arise:

(1) Are the stresses in the materials dangerously high?

(2) Can a safer and more economic structure be secured by careful attention to details?

(3) Would an increase in design stresses or a decrease in moment factors be warranted?

(4) What is the proper method of designing continuous beams?

In a partly or wholly restrained beam the positive moment at the center plus the negative moment at one end equals $1/8\ w\ L^2$ for any particular loading, L being the length of effective span and w the load per linear unit. This is for uniform load, to which the present discussion will be limited. For a uniform beam uniformly loaded and thoroughly fixed at both ends the moments are $1/12\ w\ L^2$ at supports and $1/24\ w\ L^2$ at the center. When the central part of the beam is more rigid than the portions near the ends, the points of inflection are located nearer the supports than in the case of a uniform beam section. Even when equal amounts of steel take the tension produced by the two kinds of moment the central portion, due to the flange of the T section, is more rigid than the end portions, which must act as common rectangular beam sections except in so much as they are stiffened by the compression in the bottom steel. The points of inflection are, therefore, farther out toward the supports than in a beam of uniform section. The result is a positive moment somewhat greater than $1/24\ w\ L^2$ and a negative moment correspondingly less than $1/12\ w\ L^2$. When the adjacent spans carry no live load and there is some deflection of columns, depending upon their rigidity, the positive moment is increased slightly further, with an equal reduction in negative moment. These facts possibly justify the action of the Joint Committee in recommending the use of $1/12\ w\ L^2$ for both positive and negative moments. Quite evidently this practice

is on the side of safety, although somewhat extravagant provision is made for the positive moment.

The practice of designing a beam for 1/8 w L^2 at the center and placing over supports one-half as much steel as is used in the bottom in the center of span is unjustifiable. This is equivalent to calculating the negative moment as 1/16 w L^2, which is too small. This method causes stresses in the negative steel far higher than the computed value. Likewise the actual stress in the center of the span is possibly less than half the calculated amount, the ratio depending upon the positions of the points of inflection. The exact stresses produced are somewhat problematical owing to our limited knowledge of what happens at the ends of continuous reinforced concrete beams. There are some questions which can be answered only by experiment. And the writer suggests certain tests (outlined later) which can add materially to our present information on the subject. For the present the following considerations should lead to more careful attention to details during design.

Although we seldom speak of the moment of inertia of reinforced concrete beams, it is proper in the present discussion to think of the relative moments of inertia of the end and center sections. A relatively small amount of top steel at the ends and the presence of the effective flange area throughout the central portion of the span results in a more rigid beam to resist positive moment than to resist the negative. We will denote by R the ratio of moments of inertia of the end and center sections of the beam. $R = 1$ represents a uniform beam. And smaller values of R represent more flexible end sections resulting from the aforementioned influences. Assuming that the beam ends remain horizontal, we get the following:

Value of R.	Distance from support to point of inflection.	Positive moment.	Negative moment.
1	0.211 L	$\frac{1}{24}$ w L^2	$\frac{1}{12}$ w L^2
0.8	0.20 L	$\frac{1}{22.2}$ w L^2	$\frac{1}{12.5}$ w L^2
0.5	0.17 L	$\frac{1}{18.4}$ w L^2	$\frac{1}{14.8}$ w L^2
0.3	0.15 L	$\frac{1}{16.4}$ w L^2	$\frac{1}{15.7}$ w L^2

It is seen that with a relatively flimsy end section we approach the condition of equal positive and negative moments. Yet there appears no justification for the practice of figuring the end moment as 1/16 w L^2. There is also the influence of the deflection of columns. Column deflection and some value of R which, together, would locate the points of inflection at 0.15 L from the supports, for instance, would produce the bending moments shown in the last line of the table. Increased deflection of the columns would further decrease the negative moment. Still this consideration does not warrant the use of a very small amount of steel over supports. For be it remembered that the column deflection comes about merely by the tension in this same top steel.

The last column of the table gives an affirmative answer to question (1). Apparently 1/12 w L^2 is the maximum probable value of the negative moment. This moment is attained in a uniform beam and is closely approached in beams whose sections vary considerably in rigidity. The Joint Committee recommends this value. Provision for a smaller moment should be regarded as dangerous practice.

Question (2) can be answered further by considering the values in the positive moment column of the table. It appears that a positive moment as great as 1/16 w L^2 would be difficult of attainment, particularly so when ample provision is made for the negative moment. It would seem, therefore, that a safe design would result from the use of this moment. However, before using this value, the writer would await an agreement to this moment factor by many men capable of rendering reliable opinion in the matter. The Joint Committee recommends 1/12 w L^2 for the positive moment. Yet it might be that the members permitted themselves to be somewhat influenced by the prestige of established bad practice, which always is a difficult obstacle to overcome. Possibly the Committee will see fit to make further modifications of its original report, in which case the continuous beam is hereby recommended for further consideration.

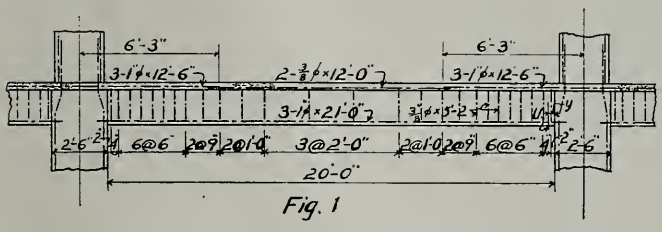


Fig. 1

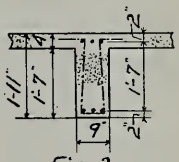


Fig. 2

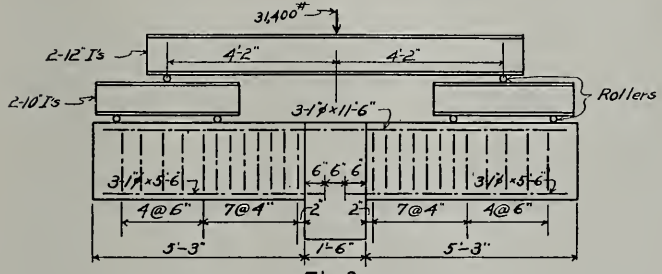


Fig. 3

Fig. 4

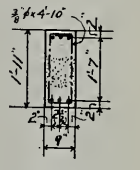


Fig. 5

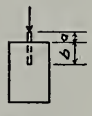


Fig. 6

In regard to question (3) the writer wishes to protest against the use of stresses any higher than those recommended by the Joint Committee. However, as already stated, he feels certain that there should be a change in the calculation of positive moment. It is his firm belief that in many modern structures there are beams in which the positive steel is never stressed to more than 10,000 lbs. per square inch, while the negative steel is working at fully twice this amount in tension and with bond stress at or near the point of partial failure, although the calculated stresses were within the usual specified limits. The specified stress should not be increased, but care should be exercised to gain close agreement between calculated and actual stresses. Structures should be so designed that the available strength of the materials is used to economic advantage.

In answer to question (4) the writer submits an example of beam design which he regards as being within the spirit of the Joint Committee's conservative recommendations, although there are some features which the Committee failed to mention and in regard to which the writer wishes to invite an expression of

dependable opinion. These points are the manner of taking into account the stress in the bottom steel at the end of span, the disposition of this stress beyond the end of clear span, the allowable bond stress and end resistance when the force acting on a rod tends to push it into a large mass of concrete, and the means of taking care of the specified shearing stress. Figures 1 and 2 show a beam built solidly into fairly large columns, the clear span being 20 ft. All main steel is straight. This is a good practice which is followed by many firms and which is economical of steel and labor when all the stresses in the rods are taken into account. With a total load of 1,750 lbs. per linear foot the end shear is 17,500 lbs. and the positive and negative bending moments are figured to be 700,000 inch pounds, using the $1/12\ w\ L^2$ rule. The value of jd at the center of span is 19.4 in. and the stress in the bottom steel is computed to be 15,300 lbs. per square inch. If specifications permitted the use of $1/16\ w\ L^2$ as the maximum positive moment we would use three ⅞ in. round rods. jd would be 19.5 in. and the computed value of the tensile stress would be only 15,000 lbs. per square inch. If this amount of steel is too little, a convincing demonstration of its inadequacy would be interesting. However, as previously stated, the writer prefers to adhere to the more conservative practice of using the 1/12 rule until there is good agreement concerning the advisability of adopting the smaller computation of positive moment. Besides, there are more important questions regarding the conditions at the ends of beams.

In the beam of Figs. 1 and 2 the section resisting negative moment is $d = 21$ in., $b = 9$ in., $A_s = A'_s = 2.36$ sq. in. If we ignore the compression in the bottom steel, the stresses appear to be $f_s = 16{,}600$, $f_c = 9.20$, jd being 17.82 in. However, unless the bottom rods have buckled or slipped longitudinally through the concrete, the compression in them is 15 times the stress in the adjacent concrete. There is no intermediate ground. Either this failure has occurred or it has not. If there has been this partial failure, the bottom rods are a source of weakness at the ends of span and they should be cut off in the region of the point of inflection where there would be no injurious effect from a sudden transfer of compression from steel to concrete. On the other hand, and this is in all probability the true condition, if all the beam materials are intact, the only reliable means of procedure is that guided by recognition of all stresses which we know to be in existence.

Taking this compression into account, the end portion of the beam must be regarded merely as a double reinforced rectangular beam. In the given example, $p = p' = 0.0125$. Exact formulas for investigating this section give $kd = 7.82$ in., $jd = 18.62$ in., $f_s = 16{,}000$, $f_c = 628$, and $f'_c = 7{,}000$. The compressive stresses are well within the limits specified by the Joint Committee and should be regarded as safe. The shear on the bjd section of the concrete is 105 pounds per square inch.

The next point to investigate is the bond stress. For the present designate by M_n the negative moment at the face of column, by M_u the negative moment at U, a small distance y from the column, and by V the end shear, the units being in pounds and inches. $M_n = M_u + Vy - \frac{1}{2}\ w\ y^2$, of which the last term

Formulas for double reinforced beams, as given in the principal text books are incorrect, as they regard both compressive steel and concrete as occupying the same space. The resulting error in stress computation will amount to 2 or 3 per cent, which is not important except when exact figures are desired as in the investigation of test members. The correct formula for k is

$$k^2 + 2\left\{ n\,p + (n-1)\,p' \right\} \quad \left\{ k = 2\left\{ n\,p + (n-1)\,p' \frac{d'}{d} \right\} \right.$$

The further computations of finding jd and the several stresses can be accomplished most easily by expressing fs and f's in terms of fc, taking the moments of the compressive stresses about the tensile steel as a center and equating the resisting moment to the bending moment.

is negligible. The total stress in the top steel at the column face is $\frac{M_n}{jd}$. And the total stress in this steel at U is $\frac{M_u}{jd}$. The change of stress in the distance y is $\frac{M_n - M_u}{jd} = \frac{Vy}{jd}$. At the extreme end the change of stress in the top steel is at the rate of $\frac{V}{jd}$ per linear inch of rod. This is the total bond stress per linear inch of rods. The unit bond stress is therefore, $\frac{V}{jd\,\Sigma o} = \frac{17{,}500}{18.62 \times 3 \times 3.14}$ = 100 lb. per square inch. This is the formula generally used. But it applies only to the tensile steel. In the case of the compressive steel there is no relation between Σo and bond stress. All compressive and tensile stresses are proportional to the bending moment. And the change in these stresses is proportional to the change in bending moment. f'_s at the end of beam was computed to be 7,000. It follows that the change in f'_s in one inch of length is $\frac{17{,}500}{700{,}000} \times 7{,}000$ = 175 lbs. per square inch, which amounts to 138 lbs. in a 1 in. rod. This change of stress in a rod divided by the circumference of the rod gives the value of the bond stress, which is 44 lb. per square inch of surface. In general, the steel stress is proportional to the distance of the steel from the neutral axis. It follows that, with equal number and size of top and bottom rods, the bond stress is proportional to the distance from the rods to the neutral axis. Commonly the tensile steel is more than twice as far from the neutral axis as is the compressive steel, which shows that the bond on the bottom steel is never critical and also that larger rods may be employed in the bottom of beam than in the top. In many cases this arrangement would be very convenient owing to the desirability of a narrow beam stem and the possibility of permitting the top rods to occupy somewhat greater width of space. Beyond the point of inflection, wherever it may be, the bottom rods are in tension, but the shear there is less than at the ends and the bond stress is unlikely to approach a critical value. Special investigation of the shear in the bottom rods will be unnecessary unless these rods are considerably larger than are the negative rods.

The subject of bond stress suggests mention of similar inquiry into the conditions in simple beams. In such members the maximum bond stress is the end shear divided by the product of jd and the sum of perimeters of rods. This is true, however, only when the concrete has been subjected to tensile stresses sufficient to produce initial cracking. At the ends, where the moment is very small and where the concrete is still intact, it will be seen that the bond stress is somewhat different, in this case being less than if the initial cracking had taken place. The usual method of computing this bond, based upon the assumed cracked section, is the only advisable course to follow. For in simple beams an initial bond failure would lead to a progressive rupture that could result only in the ultimate failure of the beam as a whole. Hooking the ends of rods or extending them some distance into supports will reduce this danger.

We now come to the result of initial bond failure in the top steel of continuous beams. Very probably there frequently is such failure in beams which have an inadequate amount of negative steel. This matter is not so important as it might seem at first glance. The maximum bond stress in the top steel is at the end of span, near the central point of rod. An initial bond failure here would

merely mean a readjustment of stresses and a slight slipping of a part of the rod through the adjacent concrete. The end of the rod is well anchored in the concrete of the portion of beam having far smaller shear. Indeed, it is difficult to imagine a complete failure due even to having the top rods run through smooth holes in the concrete for some distance near the support so long as they are well bonded throughout the rest of their length. In this connection we might ask whether conservative practice should not permit higher bond stress in such steel than is considered safe in rods whose initial bond rupture would mean final failure. Also, would it not be reasonable to consider the question of permitting higher shear in concrete at the ends of continuous beams where the concrete is under large compressive stress and where a crack entirely through the compressive area would be pressed together so securely that slipping would be difficult?

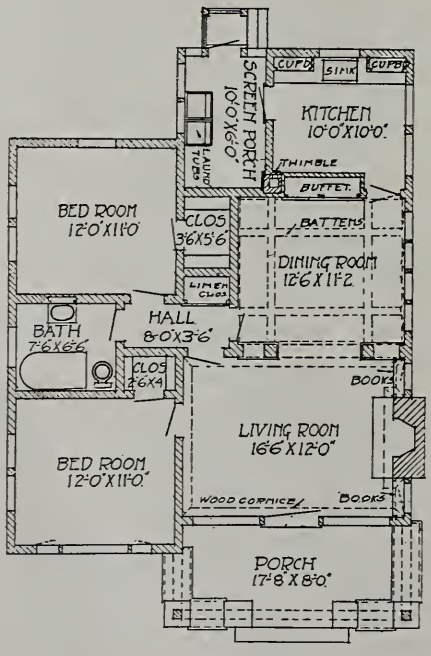
The bottom steel is under considerable compression at the end of span, as has been shown. And we must consider what becomes of this stress, i. e., how it is transferred to the concrete within the body of the column. Unless the rods extend a few inches into the column, rather high transfer stresses are sure to exist. In the stated example the bottom rods extend 6 in. beyond the end of clear span, $f'_s = 7{,}000$ and each rod carries a stress of 5,500 lbs. In some manner this 5,500 lbs. is transferred to the concrete. If 1,570 lbs. is taken by the concrete directly beyond the end of rod (2,000 lbs. per square inch), there is left 3,930 lbs. to be taken by bond on the 6 in. length or 208 lbs. per square inch of surface. High compressive and bond stresses are not especially dangerous at this point, for there is little opportunity for the materials to become disrupted, owing to the bulk of the column, and there is no space into which the rods can push.

Figure 6 illustrates a simple test that would show very readily just what strength a rod would have in resisting a force that tended to push it into a block of concrete. And Figs. 3, 4 and 5, illustrate a test piece by means of which the stresses existing in the ends of a continuous beam may be investigated very easily. The beam section is the same as the ends of the beam illustrated in Figs. 1 and 2, except that the stirrups have been spaced closer together to avoid possible early failure by shear. The loading illustrated in Fig. 3 will give the same moment and shear as are used in the example, moment of 700,000 and shear of 17,500.

At this season of the year when engineering students are working on their theses the writer wishes to suggest that experiments be made along the lines of the tests illustrated by Figs. 3 and 6. By varying the diameter of rod and the length embedded in concrete in the specimen of Fig. 6, some interesting data would probably be disclosed. Engineering students, through such tests, have an opportunity to make a real contribution to the available stock of information on this very important subject. This matter offers one of the best fields possible for investigation suitable to the needs of thesis work. And investigation by students, under the guidance of their professors, is possibly the best means of securing the desired thorough understanding of the subject. Supposing that students will give this matter some attention, the writer would be glad to correspond with those who make experiments of the kind suggested in order to put students in touch with each other, if they express a desire to that effect, so that each may have the advantage of all experiments made and that all data may be gathered together for the advantage of the engineering profession.

The writer trusts that investigation and discussion of the stresses of continuous beams will result in better understanding of the subject and in the design of structures that will be safe in all respects and yet which will make economic use of the materials of which there is so great scarcity at present.

THIS is a very convenient five-room bungalow. Its special features are the large living room, with open fire place with book cases on either side; living room and dining room have oak floors; dining room has beam ceilings and panel wainscoting; living room has wood cove in angle of ceiling and walls. This bungalow has a composition roof and shingled walls; porch walls and buttresses are covered with cement plaster. The foundation is of concrete; size, 30x35 ft., and will cost about $1800 to $2200.



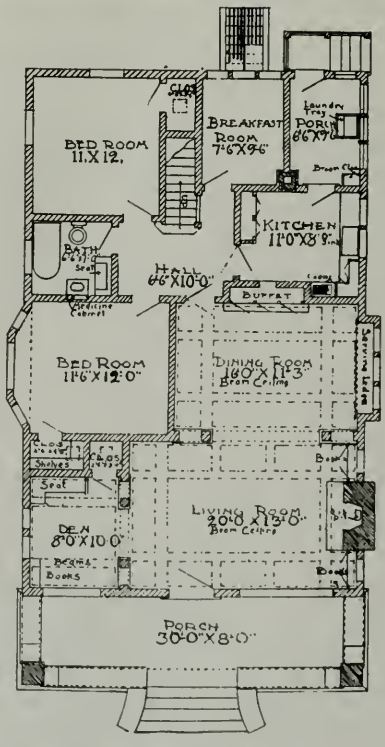
MODERATE PRICE BUNGALOW AND PLAN
By Henry L. Wilson

This house depends upon its proportions for a successful effect rather than a superfluity of beams, flower boxes, etc. Artificial stone, used for the chimneys and porch, give it a substantial appearance. An unrestricted view and breadth of effect are produced by the wire arch which is trussed over. Re-sawed siding is specified for the exterior.

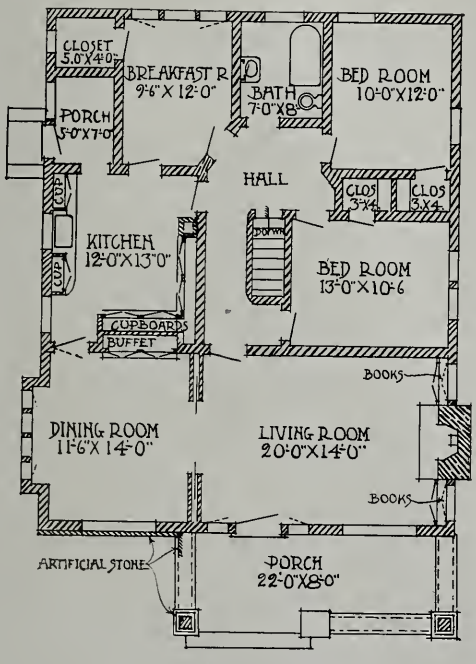
Leaded glass doors in the book cases, along side of the brick mantel, serving ledge and built-in buffet, all tend to the beauty of the home.

The buffet kitchen is well arranged with cupboards and drawers.

There can be two or three rooms finished on second floor if desired. This bungalow is 30x50 ft and will cost to build about $3750.



TWO-STORY HOUSE AND FIRST FLOOR PLAN
By Henry L. Wilson



BUNGALOW AND PLAN
By Henry L. Wilson

This attractive six-roomed bungalow is artistically set off by a stone front for the piazza, and stone pillars. The exterior is of cedar shingles; the piazza floor and steps are cement, and the foundation is of concrete.

The interior trim is slash grain Oak Panel Mission finish in living and dining room; all other rooms are finished in white enamel; living room and dining room have oak floors, beam ceiling and panel wainscoting.

The dimensions of this bungalow is 33x42 ft., and it will cost about $3000

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Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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THE TRAINED ARCHITECT AND STOCK PLANS FOR HOMES

In spite of the fact that the building of small homes offers the largest field of architecture in this country, it is rarely, if ever, invaded by the trained architect. As a result of this condition the retail lumber dealer has been compelled to incorporate into his business a plan service which requires that he be an authority upon building information and materials in his community.

Through this service he is put immediately and directly in touch with the man who pays the bills; he can safeguard his interests, eliminate the contractor's crude pencil drawings and be in a position to direct better arrangement and design, better construction and the use of proper materials. He can eliminate the contractor with bad credit rating and assist the contractor who is doing a legitimate business.

The Retail Service Bureau of the National Lumber Manufacturers Association is preaching the necessity of such a service and supplying the dealer with such technical information as is necessary in order that he fulfill part of the obligations assumed. In the question of design and economy of plan little of merit is available. The dealers have used materials at hand, their service is criticised, but the architectural profession has done nothing to help the situation.

Stock plans are an economical and a necessary method of supplying designs, and although those now available are, in general, inefficient and of no artistic merit, were they to be designed by the men who have made this country noted for the comfort, healthfulness and beauty of its best domestic architecture, they would be entirely praiseworthy. The architectural profession has an opportunity in this work to instruct the public in their much discussed ideals of the aesthetic as well as the utilitarian and show the way to every man who in his walks

amidst the incompleteness of his own town has said to himself "This could be better."

The problem is to have available plans of the highest order for the use of the speculative builder who will not, and the individual who feels he cannot afford to employ an architect. There is little reason to assume that a concerted movement by the architectural profession to supply this great need would in any way interfere with private practices and there is no doubt that such a movement would produce a wealth of material representing all regions. Books heretofore published have lacked this important feature and their usefulness has been limited thereby.

Stock plans have been in use as far back as we can remember. They are of the good, bad and indifferent sort—mostly bad—and are usually turned out by inexperienced draftsmen. If we must continue to have stock plans, why not raise the standard by securing the co-operation of experienced architects? It seems to us here is an opportunity for the American Institute of Architects to not only protect the profession but make its influence and usefulness apparent to mankind.

"OWN YOUR OWN HOME"

"Own Your Own Home" campaigns promulgated by the Department of Labor as a logical and sound way of stimulating business and absorbing labor, are accomplishing big results. Home building has taken on new life everywhere. Mr. Ernest T. Trigg, President of the National Federation of Construction Industries, has pronounced these campaigns constructive, practical and desirable and is urging Governors and Mayors to get behind the movement in their communities. Mr. Trigg said in part: "This 'Own Your Home' campaign deserves the co-operation of every community because:

"It meets a fundamental need. The nation is short of homes. Conservative estimates say we are short 500,000 homes since the war began. Some authorities place the shortage at one million.

"The campaign is of a character that will call to it every substantial business and civic element in your community. Your Chamber of Commerce, Board of Trade, general business organizations, your financial institutions, your religious and labor organizations, every element in your community interested in community improvement can be brought to co-operate enthusiastically in this campaign.

"Frankly, your investment builder, the so-called speculative builder, is and will continue to be the cautious builder. But the home is built for use and service and comfort. It is, in fact, the world's greatest investment, but those who build homes look more to comforts, conveniences and fuller life as their returns, than to dividend or interests on the money put into it. Therefore, home owning to-day pays the same ratio of that type of returns that it did before the war—indeed it pays greater returns than before the war because if this war has made plain a single fact it is the profound influence on our lives in the American home.

"Home building is the logical first step for the further reason that building is so large a part of the entire industry of the country, and 75 to 90 per cent of the building industry is labor. This is of profound significance when we are endeavoring to advise buffer employment for a period of industrial transition. But in addition to this every home that is built, immediately stimulates business locally, and creates the demand for materials and products in more than a hundred correlated industries.

"It would not be difficult to enumerate a dozen other arguments as to why a general building campaign should begin with home building. The arguments are obvious."

NOTES AND COMMENTS

By "THE-MAN-IN-ACTION"

Build Now Says Willis Polk

Willis Polk & Company, whose vast volume of reconstruction since the fire of 1906, places them in a position to speak with authority, give little credence to the popular fallacy, that present high wages and high cost of materials result in high cost of building, and stoutly maintain that the generally accepted theory that present building costs are forty percent above normal and consequently reduces earning capacity is all wrong. This conclusion is reached by the Polk Company after careful compilation of quantities and accurate estimating of every detail in several proposed buildings now under consideration. They point out that while wages were low and material cheap twenty-five to thirty years ago, that buildings like the Mills Building, Merchants' Exchange, Crocker Building, and others of that period, cost approximately forty cents and more per cubic foot; that recent buildings like the Hobart Building, Insurance Exchange and others, with high wages and high price of materials, cost but from thirty-three to thirty-six cents per cubic foot.

The force of this argument lies in the fact that all the buildings heretofore constructed by Polk's Company were completed at from ten to fourteen percent less than their original estimates. At the present time they have several million dollars of projected work under consideration in their offices. They point out that while small work, the moderate sized residence or flat, now costs from thirty to forty-five percent more than pre-war-time prices, they have several very attractive investments, which under a twenty year, six per cent bond issue, amortized, would give the investor a one million dollar building for an initial outlay of but two hundred thousand dollars.

The doubting property owner who continues to hold property in the hope that wages will be lower and material cheaper, may as well realize that he labors under a delusion. An improvement representing an investment of one million of dollars that would net fifty thousand dollars per annum, which, if delayed for two years in the hope that a break in the market or a possible reduction in construction cost might result in a saving of one hundred thousand dollars, would out of its earnings, if constructed now, more than offset such anticipated savings. But, says Polk, "There is absolutely no indication that a delay for two years will result in any such saving." Mr. Polk quizzically asks the prospective investor if he thinks wages are going down to $1.25 a day for a ten hour day, which was the prevailing wage twenty-five to thirty years ago. Any such hope may as well be abandoned at once as absurd. On the contrary, the reverse is more liable to be the case, and the chances are, that within a few years hours will be even shorter and wages higher than now.

"But it does not necessarily follow that construction costs will be greater", says Mr. Polk, "since improved labor saving devices, methods of fabrication and facilities of construction will keep pace with and offset increased cost of labor and material.

"Build now!"

The New San Francisco

Mr. William W. Kent has been writing for the Architectural Review a series of interesting articles commentary of the New San Francisco. His observations of the "down town" district embody some suggestions regarding the proper use of building materials that should not go unheeded. The photographic illustrations of San Francisco commercial buildings are disappointing, the pictures of the Newhall building being greatly out of scale and hardly in keeping with the Review's general run of illustra-

tions. "There is about 'down town' San Francisco," writes Mr. Kent, "a mingling of qualities of New York, Boston, and Chicago; so the easterner feels comparatively at home, after an hour or so. Probably the color and design of the average block has as much to do with this as anything, for the building materials here are much the same as in the eastern part of the country, although the choice is more limited. Indiana limestone, tapestry brick and various other well known kinds of brick and stone are recognizable, as well as that, to the writer, rather disagreeably colored stone which has a way of turning a dark olive color. It is a fact, that green stone of any degree or shade is seldom agreeable to the eye on the exterior of a building—unless possibly when used in mosaic, or in some of the oriental buildings where its complementary color occurs. Certainly, the usual attempt to use serpentine or olive green or green-grey stone in city structures is distinctly unsuccessful as far as the writer has been able to judge."

Mr. Kent says the growing knowledge of the proper use of exterior color in modern architecture may some day result in giving us a delightful surprise in the use of green, either in terra cotta or stone. (Green glazed tile was used some years ago on the Pacific building at Market and Fourth streets with results that today are extremely painful.) But he deems it a dangerous hue at present to handle although, as we know from nature, it is one of the best of colors and restful to the eye in a landscape. Let us hope we may some day see green successfully employed, for many are growing color weary from dirty yellow and chocolate brown—and even certain red brick, disguise it as we may with stone quoins and string courses. The French have beaten us here, as in many other matters of taste, in that they use more quiet tones in city building materials. If we or the French could use brick as the Italians of the middle ages instinctively employed it, usually with excellent terra cotta, all would be well with our brick-built commercial streets—and perhaps we shall arrive at this some day, is Mr. Kent's prediction. Certainly, the texture of some modern brick has helped us to tone down the rawness of our brick facades, but we still have, it seems, to learn simplicity, and first to unlearn the complicated way in which we are prone to employ the burnt clay products of our day.

That California architects and especially those of San Francisco may be among the first to use brick and terra cotta in an entirely new way, or at any rate, in a way which, though not copying, is inspired by the best Italian examples, is not too sanguine a hope.

Certainly where so much lovely color exists as in California, its influence is considerable.

The "Boom" in Architecture

Private E. N. Curtis, who recently returned from France and has resumed his architectural practice with Mr. William Binder, architect, San Jose, offers the following from London Punch, which readers of The Architect and Engineer who enjoy a bit of humor now and then, will undoubtedly appreciate:

"Since that far-away period before the War, my architectural nerve has become sadly debilitated; so when a card (bearing the name of Carruthers) was brought to me the other morning I felt quite unmanned.

"Some potential client", I observed inwardly, "who has heard of the removal of the five-hundred pound limit and has bearded me before I have had time to get the hang of T-square and compasses again."

I liked the appearance of Mr. Carruthers, and his greeting had a slight ring of flattery in it that was very soothing.

"You are Mr. Bellamy, the architect?" he said.

"I am," I replied; "at least I was before the War."

"And have a large practice?" he resumed.

"I certainly had a large practice formerly," I said. "With my methods and experience one ought to acquire an extensive clientele. I have been an architect, my dear sir, man and boy for over

forty years, and have always followed the architectural fashions. In the late seventies, when little columns of Aberdeen granite were the rage—you know the stuff, tastes like marble and looks like brawn—I went in for them hot and strong, and every building I touched turned to potted meat. Then Shaw came along—Bernard, was it? no, Norman—with his red brick and gables, and I got so keen that I moved to Bedford Park to catch the full flavor of it.

"Next, the Ingle-nookers found in me a willing disciple. I designed rows of houses, all roofs and no chimneys, or all chimneys and no roofs, it didn't matter which so long as there was an ingle-nook with a motto over it. Why, after a time I got so expert that I simply designed an ingle-nook and the rest seemed to grow by itself.

"Just as the War started I had broken out in another place and was getting into my Italian loggia-pergola-and-sunk-garden stride, and then came the five-hundred pound limit and busted the whole show. In fact, when you called I was wondering whether to chuck the business and go in for writing cinema plays."

"When I want a really fashionable house built for me," said Carruthers, "I shall certainly come to you."

"Ah," I said, "you have come to see me then on behalf of a friend?"

"On behalf," he said, "of several friends."

My chest swelled visibly. "This man," I said to myself, while reaching for my Corona Coronas, "is planning a garden city, or at least a group of houses on the communal plan."

"The fact is," said Carruthers, clearing his throat, "I am a scout-master, and my troop are collecting wastepaper, and I expect you have any amount of old plans and things that you——"

I was just in time to save the cigar.

Doings of Our Architects as Chronicled by the Daily Press

State Architectural Bureau

[Sacramento Union].

In a nicely illustrated publication just ready for distribution, a product of the State Printing Office, Mr. James S. Dean, Assistant State Architect, answers criticisms of the results of this method of handling the State's building and repairing operations. Mr. Dean replies in the affirmative to the query, "Is the State justified in continuing the existence of this bureau?" and presents figures to prove his case.

The bureau has been in existence twelve years, during which time, besides new work a general overhauling of nearly all of the twenty-eight major institutions has been going on, while at twenty-one other places, construction of some kind has been supervised or expert assistance given.

The report deals especially with the past two years. Forty per cent. of the work has been done by contract, 15 per cent by sub-contract and 45 per cent. by day labor. Construction as well as architectural and engineering details are within the province of the bureau.

The majority of the jobs are of less than $5,000 in cost, and during the two years, $124,857 was spent on miscellaneous repairs. Mr. Dean explains that the expenses of inspection on small contracts runs high, but nevertheless, on work actually done, he estimates that the State has saved $88,589, or 4.83 per cent. of the cost of construction, based upon the prevailing architectural and inspection fees. Contracts totaled $741,536; sub-contracts $248,627; day labor jobs $837,154. The total overhead was $174,705.

California is one of a very few States having an architectural department.

"Dream Hotel"

[Oakland Edition of Bulletin].

Mr. William H. Wilcox, 88-year-old architect, who drew the plan in 1911 of the famous "Dream Hotel" for Mr. Murray H. Durst, today won his suit for payment for those plans. Superior Judge William M. Conley awarded Wilcox $23,425, approximately 1 per cent. of the cost of the projected hotel, $2,500,000. The money must be paid by the Durst estate.

The hotel was to be ten stories high, with an airplane landing on the roof and a subway railroad terminal in the basement. The site announced was an entire block surrounded by Broadway and Twenty-second street, Webster and Twenty-third.

The defense in the suit argued that Durst had permitted Wilcox to draw the elaborate plans just to humor the aged architect, and with no idea that the hotel would ever be built. But the court holds that the scheme was a serious one in the minds of the exploiters.

Uniform Building

[Grass Valley Gazette].

This city will build in the future according to a well-defined plan that will be worked out by competent architects who will study local conditions and suggest what should be done in building streets, public buildings, parks and other features of city building. The Chamber of Commerce has engaged the services of Architects Horace G. Simpson and William Mooser of San Francisco, both of whom were recommended by the San Francisco Chapter of Architects, affiliated with the American Institute of Architects, and they are both enthusiastic over their commission. These gentlemen will first make a study of local conditions, then a preliminary plan will be worked out and presented, and the Chamber of Commerce will then turn the plan over to the city.

Attends Meeting

[From the Richmond Mail].

Mr. Francis W. Reid, the architect who drew the plans for the First Christian Church here, was in town last night from Concord to attend the prayer meeting at the church and to visit old friends. This is Mr. Reid's first visit here in several months, and he noted many improvements in the business row along Macdonald Avenue since he was here the last time.

Opens Fresno Office

Mr. Edward G. Foulkes, San Francisco architect, who has drawn the plans of some of the city's most prominent buildings, arrived in Fresno this morning, having decided to become a resident of the city. The last building planned by Mr. Foulkes was that of the U. S. Rubber company which is under construction. He stated that while he would retain his offices in San Francisco, he would spend the greater part of his time in this city.

How the Electrical Industry Can Assist the Architect

Extracts from an address by Mr. J. O. Case.

HE who makes two sockets grow where one grew before is, according to the present-day version, just as much a benefactor to the agriculturist who increases the production of blades of grass. A great deal has been accomplished along this line by the various electrical interests, but the surface has only been scratched. Perhaps the most fertile field and the one which has been most neglected is in co-operative work between the various branches of the electrical industry and the architects. It is true some of the manufacturers have done considerable missionary work and some of the contractor-dealers' associations have also accomplished excellent results. But so far a fell-defined, aggressive campaign by all branches of the industry has not been attempted. Such a campaign could well be conducted to the great benefit of all parties concerned—the consumer, the architect, central station, manufacturer, jobber and contractor-dealer.

* * *

It is a rather surprising fact, and one probably not appreciated by either architect or owner, that the electrical work in a commercial structure or residence averages only about 2¼ per cent of the total cost of construction. It is equally true that changes or additions made after completion of the job average 300 per cent higher in cost than if done as original work. Notwithstanding the fact that for a slightly increased appropriation for the electrical work a thoroughly complete job could be had, the architect will not consent to add anything outside the ordinary run of work without approval of the owner. In apartment houses the electrical conveniences are largely gauged by the rental the owner expects to obtain from his prospective tenants. In buildings to be occupied by owners the electrical layout is largely dictated by the amount the owner is willing to spend. The latter is really the turning point of the whole proposition. In the case of other products which enter into the building the manufacturers have done a large amount of consumer advertising, thereby creating a demand on the part of the public which must be satisfied by the architect. One of our big problems is, therefore, the education of consumers so that they will demand electrical conveniences.

* * *

All business of the present day is striving to give service. The architect must show his client this same service.

The building restriction during the war has resulted in congestion of living conditions which will greatly stimulate building operations just as soon as the labor and material markets will justify. Now is the proper time for the architects and the electrical industry to improve the opportunity thus offered to see to it that the new residences and business buildings about to be erected are adequately equipped from an electrical standpoint. Far too many specifications now consist about of the following: "The wiring of this building shall be done with rubber-covered wire and shall pass inspection." One does not have to look far for examples of poor specification work. Perhaps in an office-building the question of the switchboard has been handled as an after-thought, with the result that insufficient space has been provided, perhaps considerable additional conduit work is necessary, etc. A specific illustration of this was seen recently in a large building in which the switchboard, upon which were mounted open switches, was placed about three feet directly in front of the elevator. Not content with this trap the two feet back of the board had been well filled with steam pipes. A more dangerous location, front and rear, could not have been found. Needless to say this owner is having an expensive job in complying with the Accident Commission's requirements, which should have been avoided. The isolated plant in a hotel building, for instance, which has not been designed by a competent engineer, usually offers the most glaring illustration of poor engineering practice, to say the least.

* * *

In planning illumination the average architect is weak because he is not acquainted with the fundamental principles involved. He will usually welcome assistance on this, however, because in the average structure the resultant illumination, plus the switchboard, wall switches and receptacles is about all the owner sees for the money expended. Where certain standards of illumination are required by law as in the new proposed code, the architect will be compelled to work on a more scientific basis than he has been accustomed to.

The question of heavy wattage appliances is one which must be given consideration in the wiring layout. For residence work the possible installation of ranges, water-heaters, air-heaters or any device consuming more than 660 watts should be provided for. In industrial plants the list includes furnaces, tempering-baths, drying-ovens, etc.

Municipal Building

Mr. John Reid, Jr., City Architect of San Francisco, is preparing preliminary drawings for a four-story Class "A" building to be erected in the San Francisco Civic Center, for the Municipal Health Department. The architecture will be in keeping with the other buildings in the Civic Center. An appropriation of $400,000 has been requested.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Mr. Henry H. Gutterson Returns

Mr. Henry H. Gutterson, architect for the Mason McDuffie Company, has resumed the practice of his profession with offices at 278 Post street, San Francisco, after an absence of nearly two years in Canteen Work for the Christian Science Church.

Mr. Gutterson is at work on plans for a $75,000 community apartment house to be built on Spruce street, Berkeley. It will consist of fourteen apartments of from three to four rooms each. New homes being designed by Mr. Gutterson include one for Mr. H. B. Brainard to cost $8,000 and one for Mr. E. O. Stratton. Both will be built in St Francis Wood.

New Quarters for Yacht Club

Messrs. Milton Latham and Louis Upton, architects in the Powell building, at Powell and Ellis streets, San Francisco, will move shortly to new offices as the two upper floors of the Powell building have been leased by the Indoor Yacht Club. O'Brien Bros. have prepared the plans for the alterations. The Yacht Club must move July 1, as the old Techau Tavern building is to be razed to make room for the new Bank of Italy building. Messrs. Bliss & Faville are hurrying the plans for this structure so bids can be taken and contracts let early this summer.

New Residence Work

Messrs. Willis Polk & company are completing drawings for the palatial Jacklin country home in San Mateo county. The same architects are preparing plans for the new city house of Mr. Alfred Ehrmann on Washington street, near Walnut, and for extensive alterations to the Hooker residence, recently purchased by Mr. A. B. C. Dohrmann. Mr. Kennedy is again a member of the Polk staff.

Additions to Phelan's House

Mr. C. E. Gottschalk, architect of San San Francisco, has completed plans for additions to Senator Jas. D. Phelan's country house in Los Gatos and for a two story frame flat building to be built on Twelfth avenue, San Francisco, for Mr. Henry Dierks.

Architects' Examining Board Named

Members of the Oregon State Board of Architect Examiners, created by an enactment of the 1919 legislature, have recently been appointed by Governor Olcott; They are: Messrs. W. G. Chandler, Marshfield, to hold office until May 30, 1920; M. H. Whitehouse, Portland, to hold office until May 30, 1921; Lee Thomas, Bend, to hold office until May 30, 1922; J. E. Wicks, Astoria, to hold office until May 30, 1923, and W. C. Knighton, Portland, to hold office until May 30, 1924.

The new act became effective May 29. In the law it is stipulated that no one may become a member of the board who has not lived in the state and practiced the architect's profession for at least five years previous to the passage of the act. Members serve without pay, but receive 5 cents a mile and other traveling expenses when on business of the board.

Architects Move

Mr. Alfred Kuhn, architect, has moved to the Commercial building, 833 Market street, San Francisco, and has a suite of offices with Mr. Thomas M. Edwards, architect, who was formerly in the Phelan building. Mr. Kuhn has completed plans for a new candy store for Townsend on Powell street, near O'Farrell. The improvements will cost $30,000.

$250,000 Apartment House

Plans are being prepared by Mr. Joseph Cahen for a six-story Class "A" store and apartment building to be erected on the northwest corner of Geary and Taylor streets, San Francisco for Mr. I. Rosenberg at a cost of $250,000. There will be four stores and seventy-seven apartments.

Alterations to Berkeley Schools

Mr. James W. Plachek, architect of Berkeley, has been commissioned to prepare plans for additions to the John Muir and Francis Willard schools and Mr. W. H. Ratcliff, Jr., will prepare plans for additions to the Burbank and Edison schools.

Portland Building News

Bids have been received for the construction of the first unit of the Pavilion building, on the beach at Point Defiance Park, Tacoma. The architects are Messrs. A. J. Russell, Earl N. Dugan and Sutton & Whitney, Portland.

* * *

Messrs. Claussen & Claussen, architects in the Macleay building, have been selected by the Order of Red Men of Portland to prepare plans for a $30,000 club house to be erected at East Ninth and Hawthorne avenue.

* * *

Messrs. Whitehouse & Fouilhoux, architects, Railway Exchange Building, have received instructions to proceed with plans and specifications for a school building to be built at Parkdale near Hood River.

* * *

Messrs. Tourtellotte & Hummel, architects, McKay Building, have been commissioned to prepare plans for the proposed school building to be built at Haines, Ore. A bond election was recently held there, and $45,000 was authorized.

Seeks to Collect Commission

Mr. L. C. Mullgardt, the San Francisco architect, has filed suit in the Superior Court against Mr. Wickham Havens for $700. He says Havens engaged him on April 5, 1917, to prepare plans for a dwelling; that after preliminary drawings were submitted he failed to return the drawings, and on September 5, 1918, notified him not to proceed with the work.

Design Many Residences

Plans are being prepared by Messrs. Coates & Traver, Rowell Building, Fresno, for several high-class residences, including one to cost $12,000 for Mr. S. G. Fotelain, one costing $15,000 for Mr. A. G. Ship and one costing $10,000, to be built at Dinuba for Mr. Barr.

Costly Home Planned

Mr. Oscar M. Hueter is having plans prepared by Mr. J. H. Powers, architect, at 460 Montgomery street, for a $40,000 home on Vallejo street, between Lyon and Baker streets. Later it is understood Mr. Hueter's brother, E. L. Hueter, will build a fine home at Vallejo and Baker streets, San Francisco.

Thousand Oaks Home

Mr. Lloyd Rally, 604 Mission street, San Francisco, is preparing plans for a two story frame and stucco residence to be built in Thousand Oaks, near Berkeley, for Mr. Albert J. Tweedy of 1606 Sonoma street, Berkeley.

Two Residences

Mr. Thomas Franklin Power, architect of Los Angeles, has completed plans for a two-story double residence and a two-story single house to be erected at Toronto, Canada, for Mr. J. C. Coulter. The double house will be 56x45 feet, and will contain fourteen rooms. It will be of brick construction with rug brick facing, stone trim, tile roof, etc. The other residence will contain twelve rooms, four baths and two sleeping porches. It will be of hollow tile construction with stucco exterior.

Architect Denies Report

Mr. Lewis P. Hobart, Crocker Building, San Francisco, denies the report that he is preparing plans for a six-story Class "A" apartment house to be erected on California Street, east of Taylor Street, for Anna L. Brownlee, a milliner and Winfred De Wolfe, the interior decorator. The daily press published the story which, it appears, was given out with a view to stimulating realty sales.

Brick Dormitories

Mr. Myron Hunt, 1017 Hibernian building, Los Angeles, is preparing plans for two new brick dormitories to be erected at the George Junior Republic near Chino. They will each be two stories, approximately 25x100 feet, and will have concrete foundations, brick walls, stucco exterior finish, shingle roofing, pine trim and floors, plumbing, wiring, etc.

Bungalow Court

Mr. Thomas Franklin Power, 333 Higgins building, Los Angeles, is preparing plans for a bungalow court to be erected on West Sixteenth street near Flower street, Los Angeles, for Mrs. Lavelle. There will be six units of three rooms and bath each and four units of four rooms and bath each.

Bungalow Designs

The bungalow pictures and plans shown on pages 103, 104, 105 in this issue were designed by Mr. Henry L. Wilson, 510 Byrne Building, Los Angeles, publisher of Bungalow Book. It is by Mr. Wilson's courtesy that the designs are shown as examples of moderate price bungalow homes.

Designing Residences

Mr. W. H. Ratcliff, Jr. of Berkeley, is designing three large homes to be built in Claremont, one for Mr. Wm. Briggs, one for Mr. W. M. Shepard and one for Mrs. Weber. The first two will cost approximately $10,000 and the last named $15,000.

Architects Competition

A competition is announced for the best scheme for enlarging the Fullerton Union High school. The competition will be held in accordance with the code of the American Institute of Architects, and Mr. Carleton M. Winslow, of Los Angeles, has been appointed professional advisor. A program has been prepared and this with the present layout of the grounds will be furnished to architects desiring to submit plans. Competitors may register up to August 1 and all drawings must be submitted by August 28. Four cash prizes are offered, $2000, $500, $300 and $200, respectively.

Architect Announces Plans

The partnership of Messrs. Woodroofe, Griffin & Hill, architects, Tacoma, Washington, has been dissolved. The business at Tacoma will hereafter be conducted by Hill, Mock & Griffin, room 605 Tacoma building, while Mr. Arnott Woodroofe leaves the firm for independent practice with offices at Room 205 Arthur D. Jones building, Spokane, and has purchased a home in that city. Work on his boards at the present time is for School District 310 Spokane county, auditorium and high school, brick and terra cotta building for the Farmers State Bank, Coulee City, Washington, tile garage at Valleyford with several residences.

Palace Hotel Improvements

Besides a ten story addition to the southwest corner of the Palace Hotel, San Francisco, providing from 200 to 300 more rooms, the architect, Mr. George W. Kelham, has been instructed to provide plans for converting the spacious sun porch into a dancing salon, with a balcony, fitted up for private dining rooms. Another feature will be a large pipe organ, which will be built at one end of the sun room. The proposed changes to the bar will not be made until prohibition becomes effective.

Bank Building

Mr. Lyman Farwell, 2908 S. Figueroa Street, Los Angeles, has been commissioned to prepare plans for a new branch bank building to be erected at First and Cumming streets, Los Angeles, for the Home Savings Bank. The building will be of Class C construction, one story high.

Assembly Hall Being Figured

The San Jose State Normal school will have a new $80,000 concrete assembly hall. Bids for its construction are being advertised by the State Department of Engineering, Sacramento.

Mr. W. C. Hays Honored

Mr. W. C. Hays, vice-president of San Francisco Chapter, A. I. A., has been appointed supervising architect for the new school buildings to be erected in Berkeley under the $2,321,000 bond issue.

Architects Getting Busy

Among the new San Francisco buildings, plans for which were started or completed in May, are an addition to St. Agnes Academy, Ashbury and Frederick streets, $28,000; a two story office building to be erected by Meyers & Hyman at Fillmore and O'Farrell streets, $20,000; a four story building to be put up by Kiernan & O'Brien at Post and Hyde streets, $35,000; a two story building by Kruse & Andrews at Jones and Eddy streets, $29,000; an eight story building by the Summit Corporation at Hyde and Greenwich streets, $80,000; a five story apartment building to cost $260,000 at Laurel and Washington streets by Mr. C. J. Hillard; three story apartment house at Leavenworth and Bush streets, $25,000 by Mr. C. H. Curtaz; a three story flat dwelling at Union street and Van Ness avenue, $24,000, by Mr. D. J. Clancy.

San Jose Architects Busy

Messrs. Wolfe & Higgins, architects in the Auzerais building, San Jose, report they are preparing plans for the Atlas Garage, No. 172 West Santa Clara Street, to cost $9,000; remodeling store on Market Street for Mr. J. S. Williams, estimated cost $8500; two story frame residence on 13th Street for Mr. J. W. Curtner, estimated cost $10,000; residence for Dr. R. G. Curtis, Hollister, estimated cost $4500; house for Mrs. C. B. Worcester on the Story road, cost $4000; residence for Mr. G. W. Ryan, cost $9000.

Jewish Orphanage

Mr. Alfred Henry Jacobs, 110 Sutter Street, San Francisco, has been selected as architect for the new orphanage to be erected on Ocean avenue near Westwood Park, San Francisco, for the Pacific Hebrew Asylum and Home Society. There will be about a dozen one and two-story frame and brick buildings constructed at a total outlay of $500,000.

To Build Apartment Houses

Mr. C. H. Curtaz, 517 Hayes street, San Francisco, is planning to construct a number of high-class apartment houses on various lots in San Francisco. The first of these will be built on the west side of Leavenworth street north of Bush. It will be three-story Class "C" and cost approximately $30,000.

Architect Moves

Mr. Warren Perry has moved from the Atlas building, San Francisco, to offices with Mr. Geo. Sturgeon, C. E., in the Newhall building. Mr. Perry is preparing plans for a new home to be built in Claremont Court for Miss Florence Lemkey.

University Placing Unemployed in Good Positions

EXPERIENCED engineers, mechanics, chemists, and architects who have had training in the University of California are now being placed into positions through a newly created bureau of occupations by the Alumni Association of that institution. The necessity for the work was brought about by the sudden release from war service, of many state-trained experts. It is also pointed out that the expense of the State in training men and women for vocations is practically wasted if the person so trained is efficient but not employed.

No fee is charged for the service of the bureau, and already many experienced technical experts have been placed in positions where their abilities are fully utilized.

Homer Havermale, secretary of the Alumni Association, is in charge of the employment project. He is in receipt of many favorable responses from large corporations and commissions throughout the West.

One of the singular features of the bureau is that it has a method of thoroughly investigating each persons fitness for the desired position, and it uses these methods to amplify any assurance regarding the person's qualifications to the prospective employer.

Much of the early success of the bureau in this work, is attributed to the experience the Alumni Association had during its well known work as a military intelligence bureau during the War. Most of the persons applying for positions are not recent graduates but men recently discharged from the army.

Men who have been in the army, have usualy held commissions and have attained some ability in handling men on large jobs.

The following is a typical note of specification:

"ENGINEER—Five years' experience as consulting engineer, including civil and electrical work. Has done work of structural draftsman, and also office administration. In Army received experience in the handling of men on large construction work, as well as in organization and executive departments. Will go anywhere."

"If the bureau continues to be so successful," says Mr. Havermale, "it will perhaps continue, even though the situation created by the discharge of soldiers has ceased to be. But in no case is it intended to be an employment bureau for the placing of parvenues into soft jobs."

Engineers Visit Mare Island

On May 24 about fifty members of the San Francisco association of Members of the American Society of Civil Engineers made a trip to Mare Island Navy Yard as the guests of Captain Edward L. Beach, Commandant of the yard.

Re-elect most of Old Officers

Mr. Thomas R. Kimball of Omaha, Neb., was re-elected president of the American Institute of Architects at the recent annual convention at Nashville. Other officers are Mr. Charles A. Fayrot, of New Orleans, re-elected first vice-president; Mr. C. C. Zantzinger of Philadelphia, second vice-president; Mr. W. Stanley Baker of Boston, re-elected secretary; Mr. D. Everett Waid of New York, treasurer; Messrs. E. H. Hewitt of Minneapolis, Mr. W. B. Ittner of St. Louis, and Mr. H. H. Kendall of Boston, directors. Mr. Robert D. Farquhar of Los Angeles, was among those elected to fellowship.

Declines Further City Commissions

Mr. John Reed Jr., San Francisco city architect, has declined to do any further architectural work for the city, including the plans for the Nineteenth avenue and Grant Schools, now under way, until a decision is rendered by the Superior Court making valid the payment of a percentage fee, based on the cost of the structure to a city architect. The court is also to determine whether the office held by Mr. Reed comes under the scope of the civil service.

Building Cost at Low Level Now

"Building costs six months hence will, in my opinion, be greater than at the present time," declares Mr. Louis C. Mullgardt, architect. He says:

The continued exodus of foreign labor will contribute to this, and the West Coast will suffer particularly. The increase in building costs within the past two months, as in the past two years, is the result of higher wage scales. There is no reason to expect that these schedules will be reduced.

High cost of building begins as soon as the raw product comes into the domain of labor. The tree from which lumber is made as it stands in the soil represents no greater item of cost today than a similar tree did two years ago. But the felling of the tree, its transportation to the mills and its conversion into lumber requires the payment to labor of charges that call for a price of $39 per 1000 feet, as against $28 two months ago, and very much less two or three years ago for the best grades used in home building.

Quantity Surveyor Wanted

May 26, 1919,

Editor The Architect and Engineer:

I am interested in the quantity system of surveying of building materials, and wonder if I cannot, through you, obtain the names and addresses of firms who are expert in this profession in San Francisco.

I have the name of Mr. G. A. Wright, 354 Pine Street, but have been unable to communicate with him. [Mr. Wright died about one year ago].

Any information you may give me in this regard will be highly appreciated.

Yours very truly,

FRANK V. MAYO,
Architect.

c/o Kroyer Manufacturing Co.,
Stockton, Calif.

Personal

Messrs. A. E. Doyle and C. F. Merriam of Portland some time ago leased a suite of three rooms in the Seattle National Bank building at Seattle, where permanent offices will be maintained. These architects were recently commissioned to plan the new quarters and supervise the construction work in connection with the installation of the National Bank of Commerce in its new home on the Second avenue floor of the Baillargeon building.

Mr. Edmund Baergholtz, architect, 807 Spalding building, Portland, has announced that Mr. J. Franklin Watson is now associated with him and that Mr. Watson will specialize in estimating and superintend the construction of buildings while Mr. Baergholtz will devote his entire time in designing and preliminary studies.

Miss Clarisse Moise of the Neal T. Childs Company, landscape architects of San Francisco, was one of the twenty minute speakers at the second annual meeting of the Women's Vocational Conference, Stanford University, May 23. Miss Moise dwelt upon the opportunities for women in landscape architecture.

Mr. Frederick H. Eley, who has been engaged in shipbuilding work at Long Beach, has returned to Santa Ana and will resume the practice of architecture in that city. His new address is 130 West Eighteenth street, Santa Ana.

Mr. Ross Montgomery, who served in the Ordnance Department of the U. S. army during the war, has opened an office at 622 Story building, Los Angeles, and will resume the practice of architecture.

Mr. Ernest B. Hussey, Seattle engineer, has been employed by the city of Walla Walla, Washington, to superintend construction of a reservoir to cost about $150,000.

Mr. John Bakewell, of Bakewell & Brown, architects of San Francisco, is expected home in July from overseas work for the Red Cross. Mr. John Galen Howard is also looked for any day.

Mr. J. J. Rankin, formerly with Mr. W. C. Hayes, architect, has returned from overseas and has opened an office for the practice of architecture at Visalia.

Mr. Chas. Peter Weeks has gone East to recuperate from a second siege of influenza.

Mr. J. L. McCauley has moved his offices from the Burke building, Seattle, to 525 New York building.

Mr. Knud Roald, Portland architect, has opened temporary offices at 325 Railway Exchange building, that city.

$20,000 Claremont Residence

Mr. W. H. Ratcliff, Jr., architect of Berkeley is preparing plans for a $20,000 English house to be built at Claremont for Mr. William R. Briggs.

Unique Residence

Mr. Walter S. Davis, architect of Los Angeles, has prepared plans and is erecting a unique residence for himself in Hollywood. Mr. Davis recently returned from France where he served as a corporal in the camouflage section of the American Expeditionary Forces, and his endeavor will be to reproduce the appearance of the old French dwellings. Features of the house will be a Gothic vaulted living room, groined vaulted dining room, barrel vaulted sleeping rooms and vaulted Pompeiian bathroom with sunken tub. The roof will be shingled, the shingles being of various colors and laid irregularly. The exterior of the house will be plastered.

Garage and Loft Building

Mr. L. Mastropasqua, architect at 580 Washington street, San Francisco, has completed plans for a two-story brick addition to the furniture store on Columbus avenue near Union street, San Francisco, owned by C. & J. C. Favilla & P. A. Bricca. Plans are being completed by the same architect, for a two-story reinforced concrete garage to be built on Vallejo and Powell streets, San Francisco, for N. Capro and A. Podesto, at a cost of $25,000.

W. H. Weeks Busy

Mr. William H. Weeks, architect of San Francisco, has been appointed architect of the proposed memorial auditorium and high school at Santa Rosa, estimated to cost $250,000. Mr. Weeks has completed plans for a two story bank, store and apartment building to be erected in Elmhurst by the Bank of San Leandro. The Byrns hotel in Woodland is to be rebuilt on modern lines at a cost of $150,000 from plans by Mr. Weeks.

Club Additions

Mr. Myron Hunt, 1017 Hibernian building, Los Angeles, is preparing plans for additions to be made to the building of the Valley Hunt Club on Orange Grove avenue, Pasadena. The work will include a concrete swimming pool, frame bowling alley with maple floor, and tennis courts.

$250,000 Apartment House

Mr. C. J. Hillard of the C. J. Hillard Company, San Francisco, has had plans prepared by Mr. Alfred Henry Jacobs, architect in the French Bank building, for a $250,000 Class "A" apartment house at Washington and Laurel streets, San Francisco.

Hotel for Santa Ana

Mr. Myron Hunt, Hibernian building, Los Angeles, has been commissioned to prepare plans for a $125,000 80-room hotel at Santa Ana for the Santa Ana Hotel Corporation.

CANTON BANK BUILDING, SAN FRANCISCO
William Wilde, Architect

Venetian Blinds for Banking Rooms

The use of Venetian blinds to provide proper light in banks has been found very satisfactory and one of the most recent installations in San Francisco is in the Crocker National Bank. The illustrations show how well the blinds cover the windows and shade the bookkeepers' desks from the glare of the sun. In interior cities where unusual heat prevails in summertime the blinds have proven to be as effective in tempering the atmosphere of the rooms as in regulating the light.

The blinds in the Crocker Bank were installed by Mr. Edwin C. Dehn, Hearst building, who is the San Francisco representative of the manufacturers, the Western Blind and Screen Company of Los Angeles. These Venetian blinds are also handled in San Francisco by the C. F. Weber Company, who have the exclusive rights for school installations.

Ventura County Hospital

Mr. Albert C. Martin, 430 Higgins building, Los Angeles, is preparing plans for a new county hospital group at Ventura to cost $150,000. Construction will be reinforced concrete with tile roof.

Large Hotel at Spokane

Mr. Archie Rigg of Spokane is preparing plans for a four-story fireproof addition to St. Luke's Hospital, Spokane, which will have accommodations for 200 patients. Construction will be reinforced concrete.

To Design Elks Building

Messrs Houghtaling & Dougan, architects, Henry building, Portland, associated with Mr. W. G. Chandler, Marshfield, Ore., have been selected as the architects for a $50,000 hall to be erected at Marshfield for the Elks Lodge.

EXTERIOR CROCKER BANK

INTERIOR CROCKER BANK

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

San Francisco Engineers Hold Interesting Meeting

A MEETING of the San Francisco Association of Members of the American Society of Civil Engineers was held at the Engineers' Club on June 3. The primary purpose of the meeting was to discuss reports of sub-committees of the Association on subjects in connection with the work of the Committee on Development of the National Society and serve as a guide regarding the sentiments of the Association for Mr. H. L. Haehl, the Association's representative on the Committee on Development of the National Society, who went East a few days later to attend a meeting of this committee. The reports of the committees were taken up and voted upon in detail.

The report of the Committee on Technical Activities was approved and read. The first two recommendations of the Committee on External Relations with the Engineering Profession were approved. The third recommendation was disapproved, the sentiment of those present favoring co-operation between, and not amalgamation of, the various national engineering societies. Considerable opposition developed regarding the fourth recommendation, both on account of the difficulty of properly editing the personal statements of the various engineers regarding their records and on account of the large expense involved in getting out such voluminous records. This recommendation was not approved.

The most spirited discussion developed regarding the first recommendation of the Committee on Internal Relation and Local Associations. Those present, while favoring the extension of the activities and importance of the local associations within the National Society, were divided in opinion with respect to the two specific recommendations of the committee regarding means of accomplishing this, namely, the adoption of a uniform constitution for the local associations and an annual conference of delegates from the associations. These recommendations were disapproved by a small majority. The remainder of the report was approved except the provision for the abolition of the grade of Associate, which was rejected.

In the report of the Committee on Public Relations considerable discussion developed regarding the section on licensing. Those present appeared to be divided into three camps, those who favored licensing, those opposed to licensing under any circumstances, and those who were opposed to licensing, but preferred if licensing could not be prevented, that the licensing law should be drawn by the engineers, rather than by outsiders. The third camp seemed to be the most numerous. The question was finally passed up without recommendation, to the Committee on Development. Similar action was taken regarding the question of a United States Department of Public Works, as the Association is soon to hold a meeting devoted entirely to the discussion of this question. The remaining recommendations of this committee were approved.

Michigan to License Engineers

A new act repealing the present State law for registration of architects and providing for the registration of archtects, engineers and surveyors, has been passed by the Legislature of Michigan. The new Board of Examiners will consist of three architects and five engineers to be appointed by the Governor, each for a term of eight years, one member to be appointed each year. Architects registered under the existing law will be considered as registered under the new act. Any person who has been engaged in practice as engineer or surveyor or in responsible charge of the work for a period of two years shall be registered without examination in the branch in which he may show himself to be qualified.

Registrants shall be designated as registered architects; or as registered engineers of such class as the work they may have done or for which they may be qualified may determine, particularly as of classes of less general qualifications than that indicated by the title civil, mining, mechanical, electrical or chemical engineer; or as registered surveyors. No plat of the subdivision of land shall be received for record by any public official unless it has been prepared by a registered engineer or a registered surveyor and signed by him as such.

Engineers and architects of recognized standing as specialists, resident in other States, shall be admitted to practice without examination, and engineers

registered under laws of other States and countries providing equivalent requirements, and in good standing thereunder, shall be admitted to practice, provided that similar privileges are extended to the registrants under the Michigan act.

After the end of the construction season of 1919 no public work of an architectural or engineering character shall be undertaken by the State or any county, township, municipality or village thereof, the estimated completed cost of which shall exceed $2,000, unless the plans therefor shall have been prepared by a registered architect or a registered engineer, and the work shall be supervised by a registered architect or registered engineer.

No time limit is set within which registration must take place for those now qualified to register under the act. No restriction is put upon the performance of archtectural or engineering work for private parties by persons who do not call themselves architects or engineers.

The act requires an examination fee of $5 and a registration fee of $15 from those taking examinations, and a registration fee of $20 for those registered without examination, and a fee of $5 for renewal of certificates which are renewable, upon not less than thirty days' notice on January 1, 1925, and on the first day of January every fifth year thereafter.

The Engineers Club

At the weekly luncheon of the Engineers Club of Seattle, held at its club rooms in the Arctic building on May 22, Chemical Engineer Bissell of the Puget Sound Navy Yard discussed "Electric Arc Welding As Employed in Ship Construction in United States Navy Yards."

Mills College Building

Messrs. Bakewell & Brown are preparing plans for a two-story frame and plaster dormitory to cost $40,000 and to be built at Mills College.

Puffed Brick

This is a photograph of "Puffed Brick," made like ordinary brick of a peculiar clay and containing a low percentage of silica. It has every appearance of coke. It is used to make a light weight concrete. It is manufactured by the Los Angeles Pressed Brick Company.

Associated Engineering Societies

The Council of the Associated Engineering Societies of Seattle held its regular monthly meeting Friday evening, May 9th. Members present were: Messrs. Amos Slater, president; A. M. Young, secretary-treasurer; John L. Hall, S. C. Lindsey, C. A. Newhall, A. A. Miller and A. F. Bissell.

The following business was transacted: Motion carried to appoint a committee of three to ascertain what has been accomplished by the engineering questionnaries of the Engineering Council of New York, and determine whether the work justified the completion of the files.

Motion carried to continue the study of the subject of licensing engineers, a special committee to collect all existing laws and to make a comparison of the same being appointed. (The Engineers' Council has never declared itself in favor of the subject of licensing engineers, but realized that this is a question of the hour and will study the question accordingly.)

HARDWOOD HEADQUARTERS
ASH-BASSWOOD-BIRCH
AROMATIC RED CEDAR
COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
- QUARTERED OAK -
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-CIRCASSIAN WALNUT
LUMBER--TIMBER
HARDWOOD FLOORING
WYBRO VENEERED PANELS
DOWELS-TREENAILS-VENEERS
WHITE BROTHERS
FIFTH and BRANNAN STREETS
SAN FRANCISCO, CAL.

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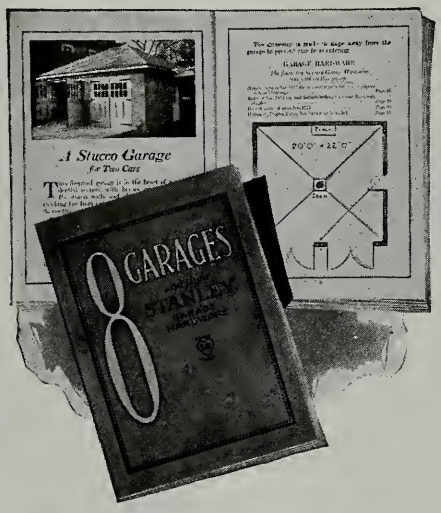

THIS booklet is being sent to prospective garage builders who are requesting it as the result of our advertisements in The Literary Digest, House Beautiful, House and Garden, Country Life and several other magazines. In the introduction we say:

> *"The building and its equipment should be of good quality and it is well to remember that a good architect and contractor are usually an economy."*

For the architect who occasionally has a garage to plan this thirty-two page booklet is crammed full of interesting information. A copy of "8 Garages" will be sent to every name on Sweet's 1919 list. If you would like to have yours immediately or if you don't happen to be on this year's list, we will gladly send you one free on request.

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PENINSULAR HOT AIR FURNACES
Catalogues on Application

Competition in Reinforcing Steel

If the number of firms now handling reinforcing bars for concrete work is a criterion, there promises to be some lively competition in this line of industry in San Francisco. No less than three firms have arranged for enlarged warehouse facilities, and all are to be located in the same block. They are the Edward L. Soule Company, whose warehouse is at Division street and Potrero avenue; the Truscon Steel Company, Mr. Chas. Holloway, Jr., local manager, which has just moved into a new warehouse on Tenth street, between Bryant and Brannan streets, and Gunn, Carle & Company, successors to Woods, Huddart & Gunn, who are to occupy a portion of a new concrete warehouse now under construction at Tenth and Bryant streets. Besides these concerns, there are the Pacific Coast Steel Company, with offices in the Rialto building, the Southern California Steel Company, represented in San Francisco by Mr. G. B. Merritt, 523 Rialto building; Messrs. Badt & Fisher, Nevada Bank building, representing the Judson Iron Works, and W. S. Wetenhall, 701 Second street.

St. Francis Wood Cottages

Miss Gertrude Comfort, architect in the French bank building, San Francisco, has prepared plans for four cottages to be erected in St. Francis Wood for the St. Francis Home Building company. They will cost $6000 to $7000 each.

OAK FLOORS
(For Everlasting Economy)

See Sweet's Catalog, Page 319

A thought which we would like to submit for the consideration of the Architectural profession is this: Why not take more frequent advantage in the construction of CHURCHES of the beauty, the cleanliness, the attractiveness, the color, the welcoming effect of *Oak Flooring?*

The cost certainly permits it and the certain approval of the congregation more than justifies it.

Is this not worth thinking about?

OAK FLOORING
MANUFACTURERS' ASSOCIATION
1014 ASHLAND BLOCK: CHICAGO:

PROSPECTS

This department is intended to assist architects and engineers in obtaining a line on new work. So far as known, no plans have been prepared for any of the work mentioned, at least not at the time of writing.—Editor.

SAN FRANCISCO—Mr. Alfred T. Morris, 501-11th avenue, San Francisco, has purchased an apartment house site on the east side of Gough street, north of California, and will build a high-class apartment house there as soon as he selects his architect.

* * *

FRESNO—Dr. C. F. Reilly has bought a lot on Van Ness avenue, between San Joaquin and Amador streets, and will improve the property with a modern apartment house.

* * *

SALINAS—Mr. S. J. Klett has purchased the lot 150x130, on the east side of Main street, near San Luis, at Salinas and will erect a concrete store building containing two stores and a garage.

* * *

MAYFIELD—The Bayside Canning Company at Mayfield will erect nineteen cottages and a large warehouse during the coming summer. The cottages will be for their employees.

* * *

SAN ANSELMO (Marin County)—A bond election has been called to vote $50,000 for one or more new school buildings.

* * *

FRESNO—Dr. O. B. Doyle has purchased the southwest corner of J and Amador streets, and will erect a fine apartment house on the site.

* * *

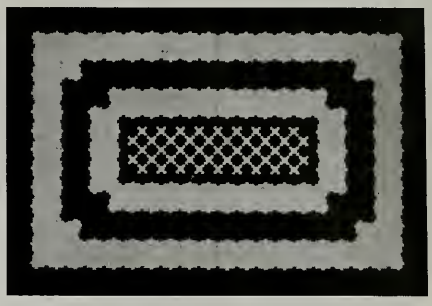
CALISTOGA—The Calistoga Joint Union High School District voted May 23 in favor of a $60,000 school bond issue.

* * *

RICHMOND—The Wesley M. E. Church will erect a $10,000 building.

Open Los Angeles Office

Hill, Hubbell & Company of San Francisco, contractors for bituminous coatings for steel, mastic floors and waterproofing, with head offices at No. 1 Drumm Street, San Francisco, have recently opened a Los Angeles office at 235 Marsh-Strong building, Mr. J. W. Finch, manager. During the last few months the company has devoted its energies exclusively to shipbuilding work, but is now expanding its activities in miscellaneous steel protection work and building construction. It is handling the products of the Bird-Archer Company and the Bituminous Products Company.



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The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Business Methods for the Building Contractor

GEORGE A. RUTHERFORD, Cleveland, Ohio*

IT has been said by someone that the three elements of business are labor, capital and management. I think it might be said also that the management in the building business is divided into two phases, namely, the supervision and the office administration. It is true that in late years a great many men have come into the field who are college men, and technically trained, and men trained in the offices of contractors. I think it also remains true that the great majority of contractors are men who served their apprenticeships in one of the principal parts of the building business, and who have come up from the position of journeyman to a foreman, then a superintendent, and afterwards they have gone into business for themselves. Those men have not had an opportunity to study business methods.

I do not think that the contractor had advanced as a business man to the extent that men in other lines like merchants and manufacturers have. I think that is largely due to the fact that the contractor has not had the advantages, possibly, which they have had.

It has been the idea that the contracting business was a gamble, and was very risky. It is not any more risky than any other business. It is simply a matter of knowing it, and when a proper system is used by a contractor, he can rest assured that he will go along just as well as men in any other line of business.

One of the principal things is the estimate. I have here an enlarged copy of the estimate we use in our office. Of course, the estimate might have fifty or sixty sheets. On the first sheet is the summary of the entire estimate. Of course, the heading is just the same as any contractor would use, with the owner's name, the designer and the location, and the estimate number, and listed by and "checked by," "dates," etc. This sheet shows:

1. General requirements.
2. Job organization.
3. Temporary construction and sheds.
4. Plant and tools.
5. Concrete plant.
6. Clearing site.
7. Excavation.
8. Foundation work.
9. Waterproofing and dampproofing.
10. Concrete—plain.
11. Reinforced concrete.
12. Brick work and masonry,
13. Stone and marble.
14. Terra cotta.
15. Interior marble and tile.
16. Structural steel and iron.
17. Ornamental iron.
18. Carpentry.
19. Metal doors and windows.
20. Glass and glazing.
21. Plumbing and sewers.
22. Heating and ventilating.
23. Plastering.
24. Painting.
25. Roofing.
26. Sheet metal.
27. Electric work.
28. Sprinklers.
29. Elevators.
30. Building equipment.
31. Ground work.

Now, taking up these first six headings as an illustration: They are all subdivided into other headings, and the estimator, in checking off his quantities and reading the specifications, checks items in the specifications; so that there is nothing under the heading that can be overlooked.

For instance, under "No. 1 General Requirements," we have these items:

Building permit.	Liability insurance.
Bond.	Contractors' association.
Fire insurance.	

That, in Cleveland, is a percentage of the amount of the contract, the same as it is in some other cities that are represented here, namely, ¼ of 1 per cent. It is part of the cost on the job, and can easily be put in there. Then we have:

Water.	Survey.
Street permit.	Contingencies.

No. 2 is "Job Organization and Expense," and under that heading comes:

Superintendent.	Telephone.
Timekeeper.	Cartage.
Engineer.	Cleaning up.
Watchman.	

No. 3. "Temporary Construction and Sheds":

Our office.	Closet.
Architect's office.	Fences and walks.
Cement shed.	Roadways.

Under No. 4, "Plant and Tools," come

Hoisting engines.	Small tools.
Hoisting tower.	Rope and tackle.
Mortar mixer.	Water lines.
Scaffold plank.	

* Address delivered at the eighth annual convention of the National Association of Builders' Exchanges at Milwaukee, February 25-27, 1919.

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No. 5. Concrete Plant:

Mixer.
Hoisting engine.
Hoisting tower.
Chutes.
Charging plant.
Storage bins.
Carpenter shop.

No. 6. Clearing Site.

Removing old buildings.
Clearing site.
Shoring, adjacent buildings.

Now, that is enough to illustrate these general headings. We will now take up "brick work and masonry," and under that title are these several heads:

Common brick.
Face brick.
Pattern brick.
Ground brick.
Fire brick.
Enamel brick.
Hollow brick.
Stack brick.
Special shapes.
Partition tile.
Packing tile.
Interlocking tile.
Gypsum block.
Fireproofing beams and columns.
Rubble masonry.
Backing up.
Toothing old walls.
Connecting present building.
Wall ties.
Setting lintels.
Setting hangers.
Outside scaffolds.
Coping.
Curbing.
Pointing.
Cleaning down.
Steps.
Boiler settings.
Flue linings.
Paving.
Chimney caps.
Safety treads.
Base.
Sidewalk lights.
Cleanout doors.
Chutes—coal and ash.
Furring.
Floor construction.
Flat arch construction.

Of course, all the headings are divided the same way, so that an estimator can hardly overlook an item if it is mentioned in the specifications. He must have some sort of a cost keeping system in order to arrive at the units to use, but, take brick work, for instance; it is not difficult; you know the cost of the brick, the cost of the sand, the cost of the cement and lumber, and you know about what the labor ought to be on certain kinds of work; and those unit prices are figured out on another sheet.

When you have the unit price, it is only a matter of mathematics to figure out the quantity and apply the rate; and that summary on each trade, of course, is carried out on the front.

Now, there are some jobs where you cannot anticipate all the things that may come up, where, for instance, it is difficult to work, or where the architect is very fussy and you do not know what he is going to want; so you must put in a "contingent" item for safety, just as the engineer puts in a factor of safety in computing his calculations on the building.

I might say I am one of those fellows I speak of who came up through the mechanical side of the business and did not have any opportunity to know much about business methods; but my father was a contractor, and I remember that he used to come home late at night, after being out all day around the work, and he would bring home a roll of drawings as big as a stovepipe, and figure at night; and I used to help him read the specifications, and help him make the computations. So that when it came time for me to go to work I said: "I would not have anything to do with that business," and I went into another line. But the building

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business got me, anyway, and I have come back to it. The first thing I made up my mind to do was that I was going to know what the cost of a job was, if I didn't know anything else; and I think the first job I did was putting up partitions under a big candy factory in Cleveland. I told the head bookkeeper at that time that I wanted to keep track of my work, and he gave me a form that they used in their business. Of course, he made some changes in it for me; but that is practically the same sheet that we have used ever since. That was in 1896, twenty-two years ago. I don't think this possibly would be the sheet I would keep the cost on for a large job if it were not for the fact we have started to take care of small jobs. We have installed a job department and do lots of small work; and this same cost sheet will be applicable to a job of $100 to $150, because you can use just as many sheets as the job requires. We have the "heading," "work floor," "address," "location," "Description of the work," and if it is a contract, the contract price is put in; or, if it is day work, the time is put in. There is a column for "extras." We make it a point to have a regular order for all costs and the amount of the costs and the date is put in there. So that when the job is completed, all that is necessary to do is to make a bill for the amount of the contract and amount of the extras.

On the other side are the "orders numbers," and as orders are made out for work on this job, the order number is put in, and before the job is footed up, they see to it that the order numbers are all checked off as having been invoiced.

The sheet shows the items as they come in. It is not necessary to itemize everything, but the invoice and the amount of it is put in there; so that you have the cost of the material, and here also is the time. There is room for some twenty or twenty-two men for thirty-one days; and of course you can use as many sheets as are required. If you have one hundred men or two hundred men you simply have that many more sheets, then we keep the different trades on different sheets, so as to put up the different trades separately for any purpose—the workmen's compensation particularly.

When our sheet is completed we have an itemized bill; if a contract, the contract price; and the extras; and before that is put away, the cost is put on and the selling price, and the gain and the percentage of gain. And then that is put away with all the records on the job, and we know just what we are doing on each job. If we do not show a gain, we have a little session and see what is the matter.

I want to say, too, that if the contractor gets into the habit of doing work that way, keeping track of things in that way, he will have a little more time to give his attention to the larger things than estimating. I do not believe the contractor ought to do estimating when his business gets to a point where he has something else to do, nor anything else. I find that after getting a system of this kind worked up, and getting an organization, I can go away to conventions and the job is going on just the same, and maybe better than if I were there.

I think we can do a whole lot by getting together and figuring on these problems. The business end is certainly the lagging end of contracting. It has not received the attention it should receive.

Robert W. Hunt & Co.

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ARMCO IRON

ENAMELED PRODUCTS

In The Home

"I call this my model Armco Iron kitchen," the housewife said. "That stove, that refrigerator, that kitchen cabinet, and that finely polished table-top are all Armco Iron Enameled Products."

"I've never seen anything more exquisite," her friend replied. "Is that what you call it—Armco Iron? Who would dream that enameled surfaces could be so beautifully smooth and perfect?"

Armco (American Ingot) Iron—*the metal beneath the enameling*—is the purest iron made, the most carefully manufactured.

Its evenness and freedom from occluded gases, seams, scars, cracks, spots, pin-holes, and other defects are what make possible the polished perfection of Armco Iron Enameled Products. They don't show ugly spots or rough places.

We will gladly aid any housewife to obtain Armco Iron Enameled Products for her home.

Write us for compete, free information.

Purity ARMCO IRON Durability

AMERICAN ARMCO INGOT IRON

The trade mark **ARMCO** carries the assurance that iron bearing that mark is manufactured by The American Rolling Mill Company with the skill, intelligence and fidelity associated with its products, and hence can be depended upon to possess in the highest degree the merit claimed for it.

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Pacific Coast Sales Office — Monadnock Building, San Francisco; other Branch Offices in New York, Chicago, Pittsburgh, Cleveland, Detroit, St. Louis, Cincinnati, Atlanta, Washington, D. C. and Buffalo.

An ample stock of Armco Iron is carried at San Francisco.

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ELECTRICAL CONSTRUCTION WORK
FOR BUILDINGS
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ELECTRICAL CONSTRUCTION CO.
ELECTRICAL CONTRACTORS
SWITCH BOARD MANUFACTURERS
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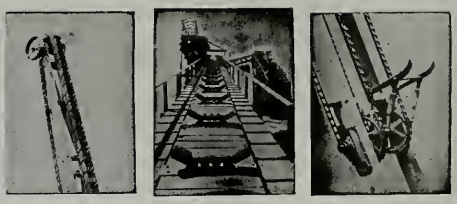
Sanitary kitchens, bathrooms and laundries are a constant joy as well as a good business investment. Nothing is more precious than the health of the family and health depends to a great extent on sanitary plumbing. For the bathroom there are built-in tubs with no exposed plumbing, standard wash basins, medicine cabinets and innumerable fittings of porcelain and white-steel products. Glass or porcelain shelves and towel racks. "Biltin" soap holders, towel and toothbrush holders, chairs, stools, costumers, sponge holders and even scales, can be had; so that it is possible, with the use of tiled walls and floors, to have an immaculate bathroom that is easy to keep clean. Those who desire color can introduce it in charming border of tile that comes in every shade.

The modern kitchen is the pride of the housewife. Through considerate arrangement of the kitchen specified by an architect, and with a white one-piece porcelain sink, icebox, tiled walls and composition floor the kitchen is a delightful place. The kitchen sinks made with back and drain boards and sink of one casting are absolutely sanitary, for there is no crack or joint for grease, germs or insects to lodge. Even laundry trays are made in one piece. Other modern sanitary equipment for the kitchen are culinary tables, mixing tables with porcelain top, vegetable sinks and garbage cans. For the kitchen also there are pure white cooking cabinets and glass shelves.

So important is good plumbing to the health and safety of the household that State laws and city ordinances control the installation of plumbing fixtures. In some cities health officers see to it that the piping of each house is kept in good condition so that the health of the city is not endangered through an individual's neglect.—Exchange.

Improve Department Store

Instead of erecting a new building the Hart Department store of San Jose will modernize their present establishment, spending about $20,000 on new plate glass fronts and plastering the brick work. Messrs. Binder and Curtiss are the architects.



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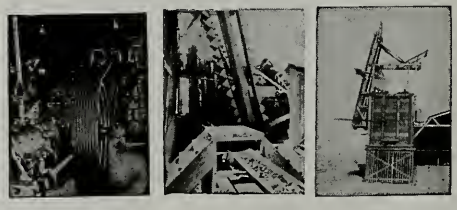

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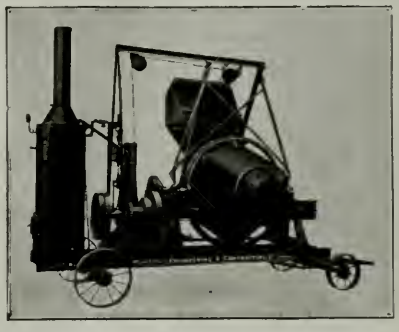

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Set No. 2510 has a service door hinged from the door casing, also two accordian doors arranged so that they may roll on the track to the side wall, swinging inward at the same time. These are held in the open position by a floor bolt.

In the manufacture of this hardware for rolling doors the Stanley Works reports that every item of consideration has been carefully gone over to make them sturdy, easily operated and easily installed, and where purchaser of garage hardware finds it necessary to use rolling doors, he can place the same confidence in Stanley garage hardware for rolling doors as he has in hundreds of other of Stanley products.

A. H. Knoll Has Much Work

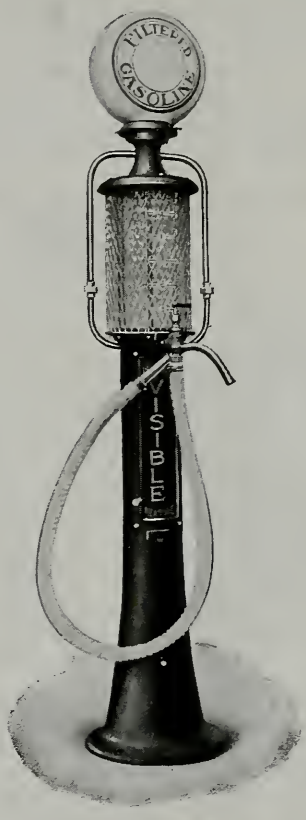
Mr. A. H. Knoll, architect in the Hearst building, San Francisco, has about $250,000 worth of apartment house work on the boards or under construction, including a five-story Class "C" building at Sutter and Leavenworth streets, for Mr. Theodore E. Rulfs, and a four-story Class "C" building on the adjoining lot on Leavenworth street for the same owner, a three-story brick veneer apartment house for Mr. H. W. Burnham on Jackson street, near Van Ness avenue, and alterations to a three-story frame building at Pine and Webster streets, for the same owner.

Moves to New Factory

The American Standard Oil Burner Company has moved to its new factory, fifth and Parker streets, Berkeley. The phone number is Berkeley 6399. The Company now enjoys better facilities for manufacture and service than formerly, and will endeavor to retain their high standard of oil burner equipment.

To Design County Buildings

Mr. Charles S. McKenzie of San Jose, has been appointed architect for a group of five buildings for the Santa Clara county poor farm. There will be dormitories and a central heating plant.



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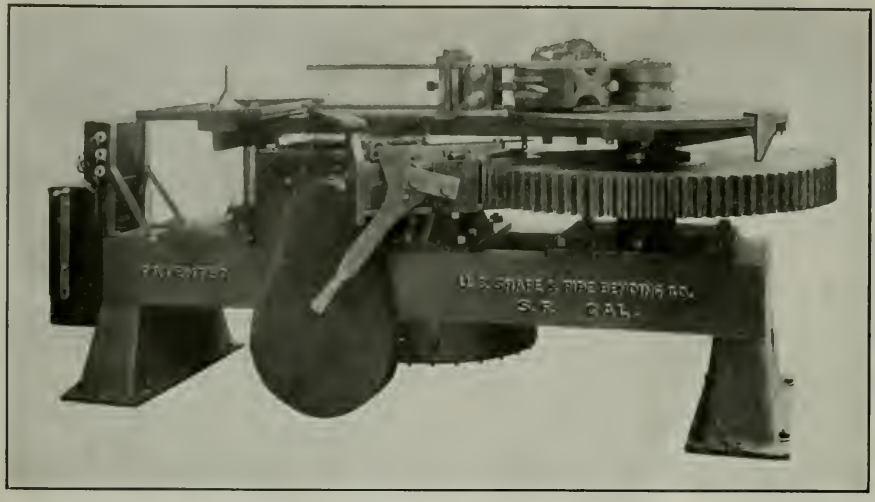

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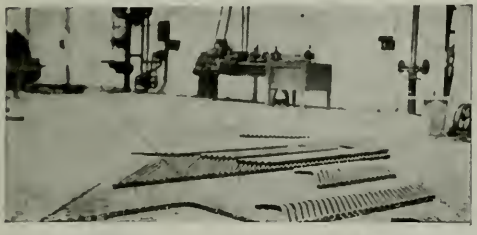

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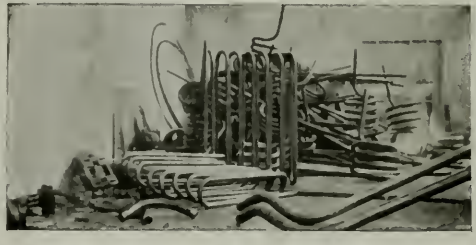

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